
*Final*

# Environmental Assessment
# Horse Creek Bridge Replacement

78th Civil Engineer Group, Optimization Branch
Robins Air Force Base, Georgia

October 1, 2010

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# FINDING OF NO SIGNIFICANT IMPACT (FONSI)/ FINDING OF NO PRACTICABLE ALTERNATIVE (FONPA) HORSE CREEK BRIDGE REPLACEMENT AT ROBINS AIR FORCE BASE

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Pursuant to the Council on Environmental Quality regulations for implementing the procedural provisions of the National Environmental Policy Act (NEPA; 40 Code of Federal Regulations [CFR] 1500-1508), Department of Defense Directive 6050.1, and Air Force Regulation 32 CFR Part 989, the 78th Civil Engineer Group/Optimization Branch (78 CEG/CEAO) has prepared an Environmental Assessment (EA) to identify and evaluate the effects of replacing the failed pedestrian bridge over Horse Creek. This EA is incorporated by reference into this FONSI/FONPA.

## PURPOSE AND NEED

The purpose of the Proposed Action is to restore pedestrian and all-terrain vehicle (ATV) access across Horse Creek. The need for the Air Force is to restore this access for Morale, Welfare, and Recreation (MWR) hunters (which supports MWR and reduces wildlife on the flight line and base), and to restore base access for security and safety. Additional needs are to reduce the chance of self-help damage by hunters, adjacent landowners, and gas line inspectors, potentially damaging the property and injuring themselves. Finally, the failed crossing needs to be removed, as it is deteriorating and obstructing the flow of the creek.

The remains of the existing bridge are partially submerged in the creek; the pipes are corroding; and they impede normal water flow and the passage of floating debris. The bridge provided the only pedestrian and ATV access to base property and designated hunting areas east of Horse Creek. The bridge also provided access to the City of Warner Robins natural gas pipeline right-of-way (ROW) that passes to the immediate north of the bridge location. The bridge and road are used for access to keep the gas pipeline clear of trees that could eventually damage or prevent maintenance of the pipeline. The road, bridge, and cleared gas pipeline ROW also are the only land routes available to the Georgia Department of Natural Resources (DNR) for access to DNR property between Robins AFB and the Ocmulgee River, and base security uses the bridge to access base property east of the creek. Under existing conditions, no access is available short of using a boat to cross Horse Creek. The Proposed Action is needed to remove the remains of the failed pipe bridge in order to improve water flow and to restore pedestrian and ATV access to land areas east of Horse Creek. (EA Section 2.1 [page 3])

## DESCRIPTION OF THE PROPOSED ACTION

The 78 CEG proposes to remove the existing bridge pipes that have failed and replace the failed structure with a new, prefabricated pedestrian bridge within the original bridge footprint. Land at the bridge site has been significantly disturbed from past construction activities, including a 0.8 kilometer (0.5 mile) access road and a filled vehicle parking area for persons accessing the bottomland forest to the east of Horse Creek. Also, approximately 1.6 kilometers (1 mile) of natural gas pipeline ROW passes immediately to the north of the Proposed Action Area.

Preliminary design specifications for the new bridge call for a structure that is 21.3-meters (70-feet) long and 1.8-meters (6-feet) wide, with capacity for carrying a 2,724-kilogram (6,000-pound) load. The new bridge would be wide enough for foot traffic and small vehicles such as

ATVs, but would not be wide enough to accommodate standard passenger vehicles, nor designed for support of standard passenger vehicle loads. The bridge would be a single prefabricated unit consisting of a steel grate bridge deck with hand rail. The finish and hand rail design would be chosen when the bridge is ordered. The bridge would be delivered to the site and placed on new concrete abutments built on the existing foundations on the creek banks, and put in place by a crane operating from the vehicle parking area adjacent to the bridge site. An engineering analysis would be conducted in order to properly design concrete abutments. Final bridge specifications are subject to findings and approval of the engineering analysis, but no abutment or support pile would be placed below the ordinary high water mark or in the creek. The bridge would be designed to offer the least cross sectional area possible and would be as light weight as proper design would allow. The base uses Best Management Practices (BMPs) during the course of day-to-day operations, and bridge construction would be performed using base-approved BMPs to minimize sediment runoff during construction. (EA Section 2.3.2 [page 5])

**DESCRIPTION OF THE NO-ACTION ALTERNATIVE**

Under the No-Action Alternative, the failed bridge components would not be removed and the new bridge would not be installed. Land access to the utilities, hunting areas, and property east of Horse Creek would not be possible. Water flow and floating debris would continue to be impeded. (EA Section 2.4 [page 8])

**ALTERNATIVES CONSIDERED BUT NOT CARRIED FORWARD**

There are no alternative locations for the Proposed Action outside the floodplain because of the extensive floodplain around Horse Creek. A new location within the floodplain would disturb additional area not previously disturbed, and it is not practicable to move the location of the existing bridge away from the existing access road to the creek. (EA Section 2.5 [page 8])

**ANTICIPATED ENVIRONMENTAL EFFECTS**

The location for the Proposed Action is within the 100-year floodplain. Prior to performing construction projects within a floodplain, the Air Force must investigate and exhaust all potential alternatives that would avoid working within floodplain resources. This requirement is consistent with Executive Order (EO) 11988, *Floodplain Management*, and the wetlands/floodplains compliance responsibilities of the Air Force per Air Force Instruction (AFI) 32-7064. EO 11988 addresses floodplain management and requires that the functions of floodplains be considered in the decision-making process. Adverse impacts to floodplains may be acceptable only if there is no practicable alternative. The project location is determined by the existing infrastructure. Non-floodplain alternatives that would involve alternative siting within the area are impracticable because they would impact previously undisturbed floodplain areas and would not effectively meet the requirements of the Proposed Action. (EA Section 4.1.3.2 [page 29])

78 CEG/CEAN has coordinated the Proposed Action with the U.S. Army Corps of Engineers (USACE) and the Georgia Environmental Protection Division (EPD). USACE determined that replacing the existing bridge was exempt from Clean Water Act Section 404 requirements per Nationwide Permit 3 (NWP 3) provided that no fill material such as soil or bridge pillars are placed in the creek, and that there is no excavation in the creek below the ordinary high water mark. The Georgia EPD stated that bridge replacement projects are exempt from Stream Buffer Variance requirements, so no notification to the state would be required. Therefore, no federal permit or state stream buffer variance is required for the Proposed Action because it involves

replacing a pre-existing transportation structure that would sit on the footprint of the previous bridge. During construction, contractors would use BMPs to prevent erosion runoff into the creek during bridge construction, obtain all appropriate environmental permits and approvals, and remove and dispose of any waste appropriately under governing regulations, resulting in only temporary and insignificant environmental impacts. (EA Section 4.1.4.2 [page 30])

No archaeological resources or historic properties are located near the proposed construction area, and cultural resources would not be affected. The Georgia Department of Natural Resources, Historic Preservation Division (SHPO), reviewed a draft of the Environmental Assessment and this Finding of No Significant Impact, and set forth in a written opinion of September 22, 2010, that "the project as proposed will have No Effect to historic properties." (EA Appendix B.) Therefore, in accordance with the base-specific Comprehensive Programmatic Agreement between Robins Air Force Base, the SHPO, and the Advisory Council on Historic Preservation (ACHP) (8 Aug 08), this action has not been formally coordinated with the ACHP or federally-recognized tribes otherwise consulted by Robins AFB. Any post-review discoveries of cultural resources would be processed under the base's Integrated Cultural Resources Management Plan (ICRMP) and managed in compliance with applicable Federal law and Air Force regulations. (EA Sections 3.6 [page 23] and 4.6.2 [page 38])

The Proposed Action would have no effect on storm water, water supply, waste and toxic materials, including base Installation Restoration Program (IRP) sites, or cultural resources. There would be temporary insignificant adverse impact on topography, surface waters, floodplains, wetlands and associated soils, groundwater, air quality, noise, and biological resources.

Topography: The presence of the new concrete abutments built on existing foundations would result in a minor, permanent alteration in topography at the bridge crossing. (EA Section 4.1.1.2 [page 27])

Surface Waters: The ground surface on top of the creek bank would be disturbed by construction of the new bridge abutments. However, the base plans to use appropriate BMPs during construction to protect the creek from erosion and sedimentation. No fill material such as soil or bridge pillars would be placed in the creek, and no excavation would occur in the creek channel below the ordinary high water mark. Any soil or vegetation disturbance would be kept to a minimum, and the soil or stream bank would be appropriately stabilized during and after construction is completed. The new bridge abutments would represent a minor, but insignificant increase in impermeable surface that would not increase storm water runoff. (EA Section 4.1.2.2 [page 28])

Floodplains and Wetlands: Aside from the insignificant alteration of the floodplain due to placement of concrete bridge abutments, the floodplain and flood zone characteristics within the Proposed Action Area would not change, and there would be no adverse effect on the function of surface water conveyance or flood storage capacity. There would be no wetland loss because the bridge would be placed in the original footprint. The temporary adverse effects from bridge replacement would be minimized to the maximum extent practicable by using appropriate BMPs to prevent erosion of sediment from disturbed areas. Concrete abutments would be placed on the creek bank on the existing foundations, and no abutment or support pile would be placed below the ordinary high water mark or in the creek. (EA Sections 4.1.3.2 [page 29] and 4.1.4.2 [page 30])

Groundwater: The shallow excavation for the bridge abutment and placement of the footing would not affect groundwater quality, and no dewatering is anticipated. (EA Section 4.1.7.2 [page 33])

Air Quality: The increase in air emissions would be temporary and total vehicle emissions would be insignificant. There would be no filling or grading that would create fugitive dust, and no increase in stationary or mobile air emissions following replacement of the bridge. (EA Section 4.2.2 [page 34])

Noise: The temporary noise increase during construction would be of short duration and insignificant in comparison to the existing noise environment that is dominated by noise generated by aircraft departures and landings. Following completion of the Proposed Action, the only noise generated would be from occasional vehicle traffic and ATV use. (EA Section 4.4.2 [page 37])

Biological Resources: The principal effects from bridge replacement would be a temporary increase in noise and traffic from construction equipment. Wildlife near the airfield is accustomed to the significant noise from aircraft departure and landing that dominates the noise environment in the Proposed Action Area, and any displaced wildlife would relocate to adjacent, undisturbed bottomland hardwood swamp areas of the extensive Ocmulgee River floodplain complex. The relatively small area of floodplain habitat affected by construction of the concrete bridge abutments within the existing bridge footprint would not result in significant adverse effects on biological resources.

The alligator is federally-listed because of its similarity to the crocodile. The alligator is present on Robins AFB, but none have been observed at the site. No populations of State plant species of concern have been identified at the bridge crossing location. (EA Section 4.5.2 [page 37])

**CUMULATIVE IMPACTS**

The cumulative effects of the Proposed Action when added to other past, present, and reasonably foreseeable future actions were evaluated and found to be insignificant. Two current or future projects (Clear Zone [CZ] improvements and CZ tree removal) that would have a similar effect on environmental resources were identified. These actions would take place in floodplain or wetland areas. Evaluation of these projects with the Proposed Action determined that no significant positive or significant negative cumulative effects on environmental resources would occur.

Cumulative effects from the temporary, minor air emissions and noise from equipment during construction/tree removal would be inconsequential. There would be insignificant cumulative adverse effects on surface water, floodplain, and wetland during construction/timbering activities. BMPs would be used to minimize adverse effects. Change in forest structure and composition resulting from timber removal would result in insignificant cumulative effects; additional trees would not be removed during bridge replacement. (EA Section 4.9 [pages 40 to 46])

**PUBLIC NOTICE**

A notice was published on August 25, 2010, in the *Houston Home Journal* inviting the public to review and comment on the Draft Final EA. A request was also submitted to the Georgia State Clearinghouse requesting review by various state agencies and a review period of 30 days.

Comments were received from the Georgia State Clearinghouse on September 29, 2010, and are addressed in the Final EA. All agency consultation is complete.

**FINDING OF NO PRACTICABLE ALTERNATIVE -** Taking the above information into consideration, pursuant to EO 11988, *Floodplain Management*, and EO 11990, *Protection of Wetlands*, and the authority delegated by Secretary of the Air Force, Order 791.1, I find there is no practicable alternative to conducting the Proposed Action within the floodplain and wetlands, and that the Proposed Action includes all practicable measures to minimize harm to the environment. The Proposed Action is in the only location where a pre-existing road exists in the floodplain and wetlands, and the replacement bridge will be placed on the failed bridge's foundation. Accordingly, I authorize the Installation Commander of Robins Air Force Base, Georgia, to implement the Proposed Action, including but not limited to such actions and contracts with respect to the aforementioned floodplains and wetlands. This fulfills both the requirements of the referenced EOs and the Air Force Environmental Impact Analysis Process (32 CFR Part 989.14) for a Finding of No Practicable Alternative.

**FINDING OF NO SIGNIFICANT IMPACT -** The Proposed Action involves replacing a failed bridge over Horse Creek with a new, prefabricated pedestrian bridge within the footprint of the old bridge. Based upon my review of the facts and analyses contained in the EA, which is hereby incorporated by reference, I conclude that the Proposed Action will not have a significant impact on the natural or human environment. An Environmental Impact Statement (EIS) is not required for this action. This analysis fulfills the requirements of the NEPA, the President's Council on Environmental Quality, and 32 CFR Part 989.

Date: 20 Oct 2010

PAUL A. PARKER, SES
Command Civil Engineer
Communications, Installations
and Mission Support

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*Final*

# Environmental Assessment
# Horse Creek Bridge Replacement

*for*
78th Civil Engineer Group, Optimization Branch
Warner Robins Air Logistics Center
Robins Air Force Base, Georgia
Contract No. FA4890-04-D-0005, Task Order Q608

October 1, 2010

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## EXECUTIVE SUMMARY

Before it failed, the Horse Creek pipe bridge at Robins Air Force Base (AFB) provided the only pedestrian and all-terrain vehicle (ATV) access to base property and designated hunting areas east of Horse Creek. The bridge also provided access to the City of Warner Robins natural gas pipeline right-of-way (ROW) that passes to the immediate north of the bridge location**.** The bridge and road were used for access to maintain the pipeline. The road, bridge, and cleared gas pipeline ROW also were the only land routes available to the Georgia Department of Natural Resources (DNR) for access to DNR property between Robins AFB and the Ocmulgee River, and base security used the bridge to access base property east of the creek. Under existing conditions, the bridge pipes have sagged into the creek, and no access is available short of using a boat to cross Horse Creek.

The purpose of the Proposed Action is to restore pedestrian and ATV access across Horse Creek. The need for the Air Force is to restore this access for Morale, Welfare, and Recreation (MWR) hunters (which supports MWR and reduces wildlife on the flight line and Base), and to restore Base access for security and safety. Additional needs are to reduce the chance of self-help damage by hunters, adjacent landowners, and gas line inspectors, potentially damaging the property and injuring themselves. Finally, the failed crossing needs to be removed, as it is deteriorating and obstructing the flow of the creek.

No reasonable location alternatives to the Proposed Action that would meet project requirements were identified because of the location of the existing access road to the Horse Creek crossing and the need to replace the bridge on the existing footprint in order to meet regulatory requirements and to minimize environmental damage from constructing a new access road and placing the bridge at a new crossing. The Proposed Action and the No-Action Alternative received detailed analysis in the EA. Other alternatives failed to meet the criteria for the project, and thus were not considered in this EA.

Under the Proposed Action, the existing bridge pipes would be removed, and the failed structure would be replaced with a new, prefabricated pedestrian bridge within the original bridge footprint. Preliminary design specifications for the new bridge call for a structure that

is 21.3-meters long and 1.8-meters wide (70-feet long and 6-feet wide) with capacity for carrying a 2,724 kilogram (6,000 pound) load. The new bridge would be wide enough for foot traffic and small vehicles such as ATVs, but would not be wide enough to accommodate standard passenger vehicles, nor designed for support of standard passenger vehicle loads. The bridge would be a single prefabricated unit consisting of a steel grate bridge deck with hand rail. The bridge would be delivered to the site and placed on new concrete abutments built on the existing foundations on the creek banks, and put in place by a crane operating from the vehicle parking area adjacent to the bridge site. No abutment or support pile would be placed below the ordinary high water mark or in the creek. The bridge would be designed to offer the least cross sectional area possible and would be as light weight as proper design would allow.

Under the No-Action Alternative, the bridge would not be replaced. Land access to property east of Horse Creek would not be possible. This would restrict the use of designated hunting areas, hinder security patrols, and preclude land access to the City of Warner Robins gas pipeline and maintenance access road and Georgia DNR land access to state-owned property between base and the Ocmulgee River. Water flow and floating debris would continue to be impeded by the collapsed bridge pipes.

The Proposed Action would have no effect on storm water, water supply, waste and toxic materials, including Installation Restoration Program (IRP) sites, or cultural resources. There would be temporary insignificant adverse impact on topography, surface waters, floodplains, wetlands and associated soils, groundwater, air quality, noise, and biological resources. There would be a minor beneficial effect on socioeconomics, and long term insignificant adverse effect on topography in the immediate vicinity of the new bridge and beneficial effects on personnel safety, base traffic, and security.

The No-Action Alternative would have no effect, except for an adverse effect on land access to properties east of Horse Creek, personnel safety, and base security, since the only access would be by boat and other self-help crossings. Cumulative impacts on the environment from the incremental impact of the Proposed Action when added to other past, present and reasonably foreseeable future actions also were evaluated and found to be insignificant.

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## ABBREVIATIONS & ACRONYMS

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| 78 CEG/CEAN | 78th Civil Engineer Group/Environmental Management Branch |
| 78 CEG/CEAO | 78th Civil Engineer Group/Optimization Branch |
| AFB | Air Force Base |
| ACHP | Advisory Council on Historic Preservation |
| ACM | Asbestos-containing material |
| AFI | Air Force Instruction |
| AFMC | Air Force Materiel Command |
| AFOSH | Air Force Occupational Safety and Health |
| ASL | Above Sea Level |
| APZ | Accident Potential Zone |
| BASH | Bird/Wildlife Aircraft Strike Hazard |
| BMPs | Best Management Practices |
| CAA | Clean Air Act |
| CEQ | Council on Environmental Quality |
| CERCLA | Comprehensive Environmental Response, Compensation and Liability Act |
| CFR | Code of Federal Regulations |
| CO | Carbon Monoxide |
| CZ | Clear Zone |
| dB | Decibel |
| DNL | Day-Night Average Noise Level |
| DoD | Department of Defense |
| DRMO | Defense Reutilization and Marketing Office |
| EA | Environmental Assessment |
| EISA | Energy Independence and Security Act |
| EO | Executive Order |
| EPD | Environmental Protection Division |
| FEMA | Federal Emergency Management Agency |
| FONPA | Finding of No Practicable Alternative |
| GCZ | Graded Clear Zone |
| HPD | Historic Preservation Division |
| HWMP | Hazardous Waste Management Plan |
| ICRMP | Integrated Cultural Resources Management Plan |
| IRP | Installation Restoration Program |
| ISWMP | Integrated Solid Waste Management Plan |
| IWTP | Industrial Wastewater Treatment Plant |
| LBP | Lead-Based Paint |
| LID | Low Impact Development |
| MWR | Morale, Welfare, and Recreation |

## ABBREVIATIONS & ACRONYMS, continued

| | |
|---|---|
| NAAQS | National Ambient Air Quality Standards |
| NEPA | National Environmental Policy Act |
| NHPA | National Historic Preservation Act |
| NOx | Nitrogen Oxides |
| NPDES | National Pollutant Discharge Elimination System |
| NRHP | National Register of Historic Places |
| $O_3$ | Ozone |
| OSHA | Occupational Safety and Health Administration |
| PA | Programmatic Agreement |
| PCB | polychlorinated biphenyl |
| PM | particulate matter |
| QRP | Qualified Recycling Program |
| RCRA | Resource Conservation and Recovery Act |
| SHPO | State Historic Preservation Office |
| SIP | State Implementation Plan |
| SR | State Route |
| STP | Sanitary Treatment Plant |
| TSCA | Toxic Substances Control Act |
| UFC | Unified Facilities Criteria |
| USACE | United States Army Corps of Engineers |
| USDA | United States Department of Agriculture |
| VOC | Volatile Organic Compound |
| WoUS | Waters of the United States |

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# 1.0 INTRODUCTION

78th Civil Engineer Group, Optimization Branch (78 CEG/CEAO), has conducted this Environmental Assessment (EA) pursuant to the National Environmental Policy Act (NEPA) to identify and evaluate potential effects of the Proposed Action and the No-Action Alternative as described in Section 2, and evaluated in Sections 3 and 4. Relevant background on Robins AFB is presented in **Appendix A**. The Horse Creek pipe bridge at Robins Air Force Base (AFB) provides the only base land access to property east of the creek and recently has failed. Under existing conditions, the pipes have sagged into Horse Creek. The Proposed Action is needed to restore access to properties east of Horse Creek and to restore normal water flow around the failed bridge by removing the old bridge components and replacing the failed bridge with a new, prefabricated pedestrian bridge at the same location and within the same bridge footprint as the old bridge. Only the Proposed Action and the No-Action Alternative received detailed analysis in the EA. Other alternatives failed to meet the criteria for the project and thus were not considered in the EA.

The Proposed Action specifically includes removing the existing bridge pipes that have failed and replacing the failed structure with a new, prefabricated pedestrian bridge within the original bridge footprint. Land at the bridge site has been significantly disturbed from past construction activities, including a 0.8-kilometer (0.5-mile) access road to the crossing location and a filled vehicle parking area for persons accessing Horse Creek and bottomland forest to the east of the creek. Also, approximately 1.6 kilometers (1 mile) of natural gas pipeline right-of-way (ROW) passes immediately to the north of the Proposed Action Area.

NEPA requirements help to ensure that environmental information is made available to the public during the decision-making process and prior to actions being taken. 78 CEG/CEAO provided an opportunity for public and agency review of, and comment on, the Draft Final EA prior to completion of the Final EA. A public notice was published on August 25, 2010, in the local newspaper, the Houston Home Journal, to announce the availability of the Draft Final EA. Copies of the Draft Final EA were sent to the Georgia

State Clearinghouse for distribution to relevant state regulatory agencies. Comments were received from the Georgia Historic Preservation Division and the Environmental Protection Division. Comments received from the public and relevant state and federal agencies during the 30-day review period were incorporated into the Final EA to complete the consultation process. Copies of the public notice and agency correspondence are presented in **Appendix B**.

# 2.0 PURPOSE AND NEED AND DESCRIPTION OF ALTERNATIVES

This chapter presents the purpose and need for action, describes the Proposed Action and No-Action Alternative, and summarizes the consequences of implementing the Proposed Action and the No-Action Alternative.

## 2.1 PURPOSE AND NEED FOR THE PROJECT

The purpose of the Proposed Action is to restore pedestrian and all-terrain vehicle (ATV) access across Horse Creek. The need for the Air Force is to restore this access for MWR (Morale, Welfare, and Recreation) hunters (which supports MWR and reduces wildlife on the flight line and Base), and to restore Base access for security and safety. Additional needs are to reduce the chance of self-help damage by hunters, adjacent landowners, and gas line inspectors, potentially damaging the property and injuring themselves. Finally, the failed crossing needs to be removed, as it is deteriorating and obstructing the flow of the creek.

The Horse Creek pipe bridge provides the only land access to base property east of the creek and recently has failed. The remains of the existing bridge are partially submerged in the creek; the pipes are corroding; and impede normal water flow and the passage of floating debris. The bridge provided the only pedestrian and ATV access to base property and designated hunting areas east of Horse Creek. The bridge also provided access to the City of Warner Robins natural gas pipeline ROW that passes to the immediate north of the bridge location**.** The bridge and road are used for access to keep the gas pipeline clear of trees that could eventually damage or prevent maintenance of the pipeline. The road, bridge, and cleared gas pipeline ROW also are the only land routes available to the Georgia Department of Natural Resources (DNR) for access to DNR property between Robins AFB and the Ocmulgee River, and base security uses the bridge to access base property east of the creek. Under existing conditions, no access is available short of using a boat to cross Horse Creek. The Proposed Action is needed to remove the remains of the failed pipe bridge in order to improve water flow and to restore pedestrian and ATV access to land areas east of Horse Creek.

## 2.2 REQUIREMENTS OF THE PROJECT

Horse Creek is approximately 21.3 meters (70 feet) wide at the location of the failed bridge, and land at the bridge site has been significantly disturbed from past construction activities in the area associated with the natural gas pipeline and development of the access road and vehicle parking area on the west bank of the creek. Under existing conditions, no access is available short of using a boat to cross Horse Creek.

Several requirements were identified in order to fulfill the purpose of the Proposed Action at Robins AFB. The Proposed Action and other Alternatives were screened against the following criteria:

- Bridge structure must be capable of carrying foot traffic and ATVs, but should not support standard passenger vehicles.
- Construction can not involve dredging or placing fill in the creek or adjacent wetland.
- No abutment or support pile can be placed below the ordinary high water mark or in the creek.
- Bridge structure should have the least cross-sectional profile possible.
- Bridge structure should be as lightweight as proper design would allow.
- Desired specifications:
    - Dimensions – 21.3-meters long by 1.8-meters wide (70-feet long by 6-feet wide)
    - Capacity – maximum 2,724 kilogram (6,000 pound) load
    - Materials – steel grate deck with hand rail.
- The Alternative must be economically feasible and protect the environment.
- The action must not construct new access road or bridge foundations in wetlands or floodplains that do not contain such improvements.

## 2.3 DESCRIPTION OF PROJECT LOCATION AND PROPOSED ACTION

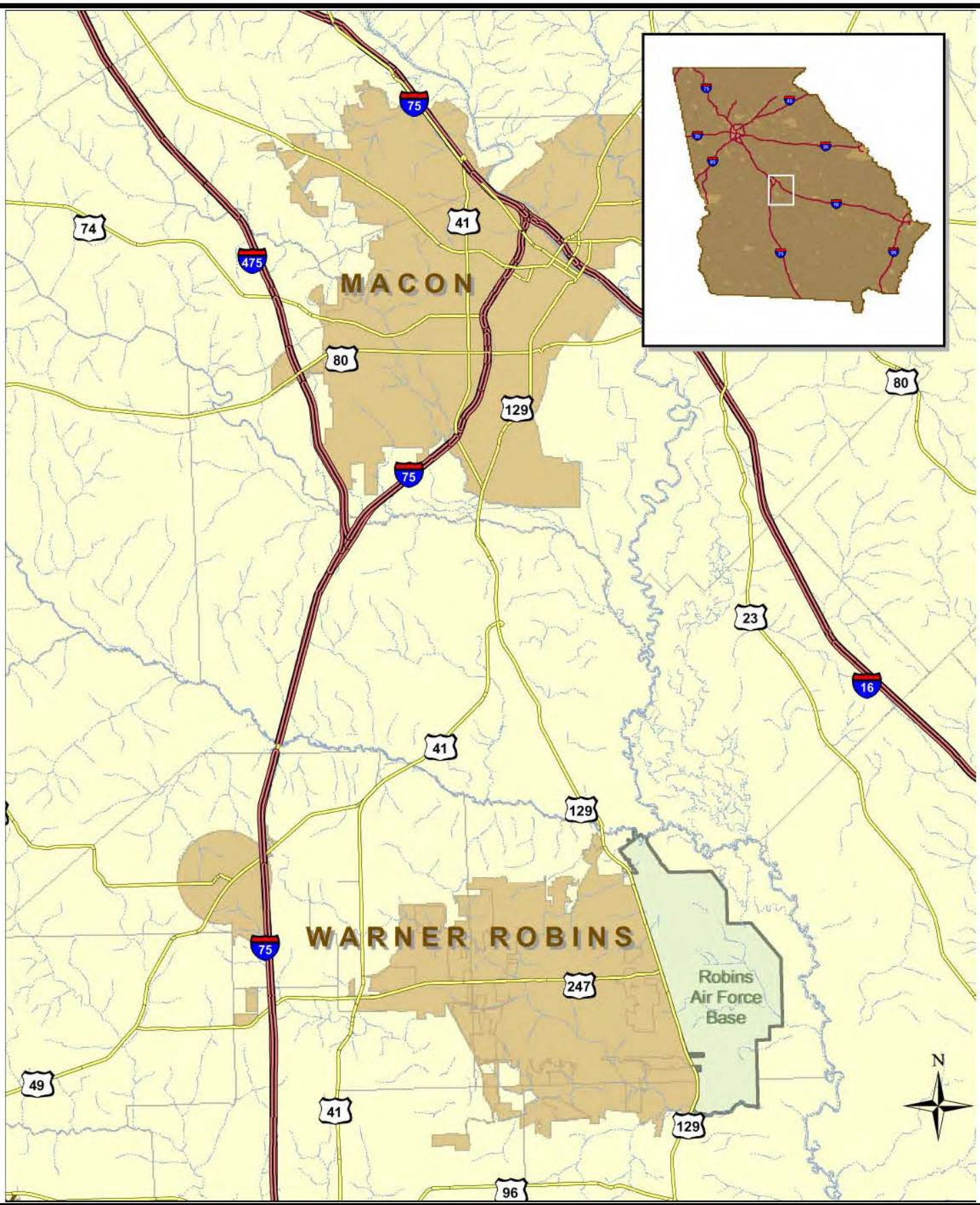
### 2.3.1 Description of the Project Location

The Proposed Action location is Robins AFB, located in Houston County in central Georgia, approximately 161 kilometers (100 miles) southeast of Atlanta, 30 kilometers (18 miles) south of Macon, and immediately east of the City of Warner Robins (**Figure 1)**. Horse Creek, the most significant stream on base, is a small bottomland stream draining marshland on the northeastern portion of base. It is located east of the airfield and flows southward through the bottomland hardwood swamp natural community to its confluence with the Ocmulgee River.

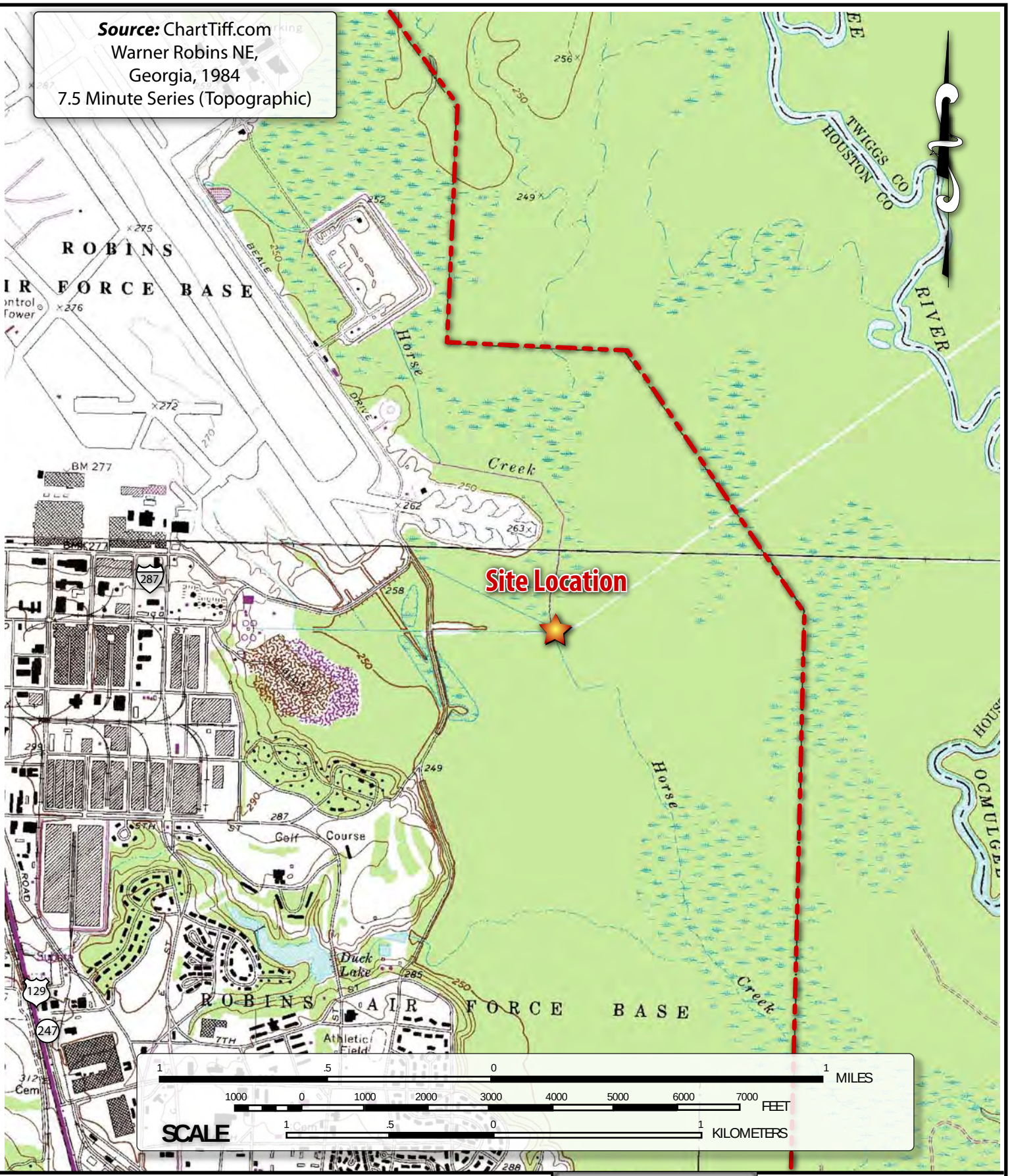
### 2.3.2 Description of the Proposed Action

A sizable portion of base property lies to the east of Horse Creek, and the Horse Creek bridge provides the only land access to the area (**Figure 2,** see **Appendix C for photographs of the bridge before and after collapse**). The pipe bridge recently failed, and the pipes have sagged into the water. The collapsed pipes are corroding and impeding the normal flow of water and passage of floating debris around the failed structure. Under the Proposed Action, the existing bridge pipes would be removed, and the failed structure would be replaced with a new, prefabricated pedestrian bridge within the original bridge footprint.

Preliminary design specifications for the new bridge call for a structure that is 21.3-meters long and 1.8-meters wide (70-feet long and 6-feet wide) with capacity for carrying a 2,724-kilogram (6,000-pound) load. The new bridge would be wide enough for foot traffic and small vehicles such as ATVs, but would not be wide enough to accommodate standard passenger vehicles, nor designed for support of standard passenger vehicle loads. The bridge would be a single prefabricated unit consisting of a steel grate bridge deck with hand rail. The finish and hand rail design would be chosen when the bridge is ordered. The bridge would be delivered to the site and placed on new concrete abutments. An engineering analysis would be conducted in order to properly design




| | | | |
|---|---|---|---|
| CLIENT: | Robins Air Force Base | | TITLE: Vicinity Map |
| PROJECT: | Horse Creek Bridge Replacement | | |
| DATE: April 2010 | DESIGNED BY: | | |
| SCALE: Unknown | DRAWN BY: J. Gross | | |
| FILE: H:\proj\RAFB\Horse Creek Bridge\Figure 1VicinityMap.a4 | CHECKED BY: L. Neal | 78th Civil Engineer | PROJ NO.: 15268146 / FIG.: 1 |




| | | | |
|---|---|---|---|
| CLIENT: | Robins Air Force Base | | TITLE: Horse Creek Bridge Location |
| PROJECT: | Horse Creek Bridge Replacement | | |
| DATE: | April 2010 | DESIGNED BY: | |
| SCALE: | Unknown | DRAWN BY: | J. Gross |
| FILE: | H:\proj\RAFB\Horse Creek Bridge\Figure2 Topo.ai | CHECKED BY: | L. Neal |
| | | PROJ NO.: | 15268146 |
| | | FIG.: | 2 |

78th Civil Engineer

concrete abutments that would be placed on the creek bank. Final bridge specifications are subject to findings and approval of the engineering analysis, but no abutment or support pile would be placed below the ordinary high water mark or in the creek. The bridge would be designed to offer the least cross-sectional area possible and would be as lightweight as proper design would allow.

## 2.4 NO ACTION ALTERNATIVE

Under the No-Action Alternative, the bridge would not be replaced. Land access to property east of Horse Creek would not be possible. This would restrict the use of designated hunting areas, hinder security patrols, and preclude land access to the City of Warner Robins gas pipeline and maintenance access road and Georgia DNR land access to state-owned property between base and the Ocmulgee River. Water flow and floating debris would continue to be impeded by the collapsed bridge pipes.

## 2.5 ALTERNATIVES CONSIDERED AND ELIMINATED FROM FURTHER CONSIDERATION

In accordance with NEPA requirements, alternatives to the Proposed Action were considered in order to avoid unnecessary impacts and allow analysis of reasonable ways to achieve the stated purpose. For alternatives to be considered reasonable and warrant further detailed analysis they must be affordable, implementable, and meet the purpose and need for the action based on the project requirements stated in **Section 2.2**.

No reasonable alternatives to the Proposed Action that would meet these criteria were identified because of the location of the existing access road to the bridge crossing and the need to replace the bridge on the existing footprint in order to meet regulatory requirements and to minimize environmental damage from constructing a new access road and placing the bridge at a new crossing. A new location for the bridge within the floodplain would disturb additional area not previously disturbed, and it is not practicable to move the location of the existing bridge away from the existing access road to the creek. There is no practicable alternative to conducting the action in floodplain/wetland

areas because Horse Creek flows through the extensive bottomland hardwood swamp of the Ocmulgee River floodplain. Based on this analysis, only the Proposed Action and No-Action alternatives are discussed further in this EA.

## 2.6 COMPARISON OF POTENTIAL EFFECTS

Alternatives receiving detailed evaluation in this EA, which are the Proposed Action (replacement of Horse Creek bridge with a prefabricated bridge structure), and the No-Action Alternative, were compared. The comparison showed that the Proposed Action would have no effect on storm water, water supply, waste and toxic materials, or cultural resources (**Table 2-1**). There would be temporary insignificant adverse impact on topography, surface waters, floodplains, wetlands and associated soils, groundwater, air quality, noise, and biological resources. After construction, there would be an insignificant adverse impact on topography in the immediate vicinity of the new bridge. There would be a short-term, minor beneficial effect on socioeconomics, and long term beneficial effect on personnel safety, base traffic and security. The No-Action Alternative would have no effect, except for an adverse effect on personnel safety, transportation and base security (**Table 2-1**).

Based on the evaluation contained herein, implementation of the Proposed Action would result in no significant direct or cumulative adverse effects and a potential beneficial effect on personnel safety, base traffic, and security. The No-Action Alternative would result in an adverse effect on land access to properties east of Horse Creek, personnel safety, transportation and base security, since the only access would be by boat.

## Table 2-1. Comparison of Alternatives Receiving Detailed Evaluation

| **Phase of Action (C = Construction; O = Operation)** | | **Proposed Action** | | **No-Action Alternative** |
|---|---|---|---|---|
| | | **C** | **O** | **N/A** |
| **Environmental Component** | | + = Beneficial Effect, --- = Insignificant Adverse Effect, X = Adverse Effect, O = No Effect | | |
| Physical Environment | Topography | --- | --- | O |
| | Surface Waters | --- | O | O |
| | Floodplains and Wetlands | --- | O | O |
| | Storm Water | O | O | O |
| | Geology and Soils | --- | O | O |
| | Groundwater | --- | O | O |
| | Water Supply and Drinking Water | O | O | O |
| Air Quality | | --- | O | O |
| Waste Management and Toxic Materials | Wastewater | O | O | O |
| | Solid Waste | O | O | O |
| | Hazardous Materials and Waste | O | O | O |
| | Toxic Materials | O | O | O |
| Noise Environment | | --- | O | O |
| Biological Environment | | --- | O | O |
| Cultural Resources | | O | O | O |
| Socioeconomic Environment | | + | O | O |
| Safety | | O | + | X |
| Transportation | | O | + | X |
| Cumulative Impacts | | O | O | O |

# 3.0 AFFECTED ENVIRONMENT

This section describes the existing environment within the area potentially affected by the Proposed Action and No-Action Alternative. A brief description of the Proposed Action Area is followed by descriptions of the physical environment, air quality, waste management and toxic materials, noise environment, biological environment, cultural resources, socioeconomic environment, and transportation and safety. Discussion of the described elements and resources provides the basis for analysis of potential effects on the environment from the Proposed Action and No-Action Alternative.

Relevant background on Robins AFB is presented in **Appendix A**. Site-specific information presented in this section is derived from on-site evaluation and information obtained from 78th Civil Engineer Group/Environmental Management Branch (78 CEG/CEAN) and other Robins AFB personnel.

The Proposed Action consists of removing the existing bridge pipes that have collapsed into Horse Creek and replacing the failed bridge with a new, prefabricated pedestrian bridge within the original bridge footprint. The Proposed Action Site is located within the bottomland hardwood swamp forest that provides habitat for numerous species of birds and other wildlife.

## 3.1 PHYSICAL ENVIRONMENT

The following description of the physical environment of the study area is based on its principal components: topography, surface waters, floodplains, storm water, wetlands, geology and soils, groundwater and water supply and drinking water.

### 3.1.1 Physiography and Topography

Robins AFB is located in central Georgia on the upper margin of the Upper Coastal Plain physiographic province**.** The eastern portion of base is dominated by the broad Horse Creek/Ocmulgee River floodplain **(Figure 3)**. The erosion action of the Ocmulgee has created bluffs, high floodplain, deep swamp, meander scars, loops, and oxbow lakes.

Beale Drive

Richard Ray Boulevard

Horse Creek

City of Warner Robins Natural Gas Pipeline ROW

Dirt/Paved Path

Horse Creek Ditch

Horse Creek Bridge Replacement Site

Hannah Road

0 325 650

SCALE IN FEET

| | | | |
|---|---|---|---|
| CLIENT: | Robins Air Force Base | | |
| PROJECT: | Horse Creek Bridge Replacement | | |
| DATE: | April 2010 | DESIGNED BY: | |
| SCALE: | As Shown | DRAWN BY: | J. Gross |
| FILE: | H:\Proj\RAFB\Horse Creek Bridge\Figure 3.ai | CHECKED BY: | L. Neal |

78th Civil Engineer

TITLE: **Proposed Action Vicinity Map**

PROJ. NO.: 15268146

FIG.: 3

Elevations on Robins AFB range from a high of 90 meters (296 feet) above sea level (ASL) to a low of approximately 72 meters (235 feet) ASL in the floodplain of the Ocmulgee River. Relief is generally minimal on most of base, rarely over 10 meters (30 feet) locally. Several ridges less than 3 meters (10 feet) above the average elevation of the Ocmulgee floodplain extend into the floodplain.

**Proposed Action Area.** The topography at the Proposed Action Site is relatively low-lying in the floodplain of the Ocmulgee River east of the higher elevations of upland areas of base.

### 3.1.2 Surface Waters

Most of the landforms on and around Robins AFB have been affected by the Ocmulgee River, which is one of the dominant watercourses in west-central Georgia and is part of the Altamaha River drainage. The Ocmulgee is the sixth largest river in Georgia based on mean annual flow rate.

The upland portion of Robins AFB is drained by four intermittent streams that flow west to east into the Ocmulgee floodplain. Surface water drainage on the northern portion of base generally flows from west to east from State Route (SR) 247 to Echeconnee Creek and Horse Creek (the primary perennial stream on base), the wetlands north and east of base, and eventually to the Ocmulgee River. Horse Creek starts along the eastern perimeter of the airfield area, and flows southeast through Ocmulgee floodplain wetlands before joining the Ocmulgee River.

**Proposed Action Area.** Horse Creek originates on the eastern side of the airfield, just south of the East Ramp Campus, and flows southeastward to the Ocmulgee River. Storm water drainages of the southern portion of the airfield receive water from storm sewer lines that drain the base industrial area and traverse the former landfill located to the south of the runway. The storm water ditch feeds into Horse Creek Ditch that carries storm water into Horse Creek that flows into the Ocmulgee River. Surface waters are not currently being significantly impacted by the subject area or by onsite operations.

### 3.1.3 Floodplains

The Ocmulgee River floodplain is about 4.8 kilometers (3 miles) wide from bluff to bluff at Robins AFB. The distance from the westernmost bluff of the floodplain on base to the river averages about 3.2 kilometers (2 miles). Nearly all of the Horse Creek/Ocmulgee River floodplain at Robins AFB falls into Zone A, the area of 100-year floods**.**

**Proposed Action Area.** Based on review of flood insurance rate maps of the Federal Emergency Management Agency (FEMA, 1996a, 1996b) and topographic surveys, areas at or below an elevation of 79 meters (258 feet) ASL are within the 100-year floodplain. The Proposed Action Area is located within the 100-year flood zone. During a 100-year flood, the area would be inundated by flood water.

### 3.1.4 Wetlands

Approximately 911 hectares (2,250 acres [26 percent of the land area]) of delineated wetlands occur across base, and high-quality wetlands are present throughout the undeveloped portions of the base. Most of the wetlands are broad-leaved deciduous, forested, palustrine wetlands**.** Significantly more than half of all the wetlands on base are associated with the Ocmulgee River floodplain. Wetlands in the Ocmulgee floodplain are seasonally and semi-permanently flooded.

**Proposed Action Area.** The eastern portion of base is extensive bottomland hardwood swamp forest. The bottomland hardwood swamp is a palustrine, forested, broad-leafed deciduous wetland that is seasonally and semi-permanently flooded (Rust Environment & Infrastructure, 1999). This wetland receives the majority of the storm water runoff from base. The bottomland hardwood swamp is a base-designated significant natural community because of its high quality, large size, excellent wildlife habitat and critical storm water retention function.

### 3.1.5 Storm Water

Storm water runoff can enter base from areas to the west principally through three storm water inlets; one near Building 380, one near Building 640, and one north of the Green Street Gate.

Storm water from the two southern inlets flows east and eventually flows into the floodplain wetlands and Horse Creek east of base. Storm water from the Green Street Gate inlet flows through a pipe that discharges into a tributary to Echeconnee Creek.

Storm water runoff from the northern portion of base flows north/northeast to the wetlands of the Ocmulgee River floodplain. Storm water from the north-central portion of base flows along natural, intermittent streams and man-made drainage features into Horse Creek. Storm water from the south-central portion of base flows into the intermittent streams that feed Duck Lake, then continues to flow east along the unnamed stream through Patton's Pond and into wetlands. Storm water on the southern portion of base flows along natural and man-made features to floodplain wetlands. Some storm water runoff collects in Scout Lake and Luna Lake. The natural drainage of storm water from the industrial areas on the southern portion of base flows to the floodplain wetlands of Sandy Run Creek.

**Proposed Action Area.** Storm water drainage from the north-central portion of the airfield and base residential and industrial areas feeds into the Horse Creek Ditch that runs parallel to the Horse Creek access road and discharges into Horse Creek at the location of the failed bridge.

### 3.1.6 Geology and Soils

The soil survey of Houston County (USDA, 1967) mapped the most common upland soils as Lucy sand, Lakeland fine sand, and Orangeburg sandy loam. The bottomland soils were mapped as either Chastain-Leaf or Swamp soils. The soils at Robins AFB were mapped more recently in 1992 (Gulf, 1992). The 1992 soil survey produced more detail for the base, and included some soil series not mapped in the original U.S. Department of Agriculture (USDA) survey. Eighteen soil units and nine complexes are mapped. The upland soils are typically sandy and well-drained with low fertility, while the bottomland soils are generally moderately well- to very poorly-drained and subject to flooding. In general, all undeveloped soil types on base, including both bottomland (wetland) and upland soils, are suitable for wildlife food plants and protective cover vegetation.

Potential prime agricultural soils on base include Bonifay loamy sand, Dothan loamy sand, Fuquay loamy sand, Lynchburg sandy loam, and Orangeburg sandy loam. Chastain, Grady, Kingsland, Osier-Kinston, and Tawcaw soils are considered wetland (hydric) soils and typically are not suitable for construction. The acreage covered by each soil type and its percentage of the total area of base are presented in **Table 3-2** of **Appendix A**.

**Proposed Action Area.** Other than the disturbed soils associated with previous construction of the natural gas pipeline, access road, and parking area at the Horse Creek bridge crossing, soils of the bottomland hardwood swamp are silty loam and sandy loam, hydric (wetland) soils. These soils include Chastain loamy sand, Tawcaw silt loam, and Hydraquents.

### 3.1.7 Groundwater

**Aquifers**

Background information concerning the aquifers at Robins AFB is presented in **Section 3.3 of Appendix A.**

**Proposed Action Area.** Soils within the Proposed Action Area are generally saturated at the surface, except during extreme drought conditions. Seasonally the entire area is flooded. No groundwater contamination is known to exist in the area.

### 3.1.8 Water Supply and Drinking Water

Robins AFB operates its own public water supply system under State of Georgia Permit No. CG1530042. All water supplied to base is obtained from groundwater wells. The system receives water from six water supply wells installed between May 1956 and 2004, all of which produce water from the Blufftown aquifer. The capacity of the public supply wells is 45,041 cubic yards (11.9 million gallons per day per day; however, constant use at this rate is not possible due to permit withdrawal limitations. The water supply system provides water for irrigation, industrial processes, and drinking water to a population of approximately 1,577 on-

base residents and to the base workforce of over 21,000 civilian and military personnel. An additional non-potable water well is used strictly for recreational purposes, filling Luna Lake.

**Proposed Action Area.** The water supply and drinking water wells are not located near the Proposed Action Area.

## 3.2 AIR QUALITY

### 3.2.1 Regional Air Quality

The State of Georgia is in attainment for all National Ambient Air Quality Standards (NAAQS) criteria pollutants except for ozone ($O_3$). Bibb and Monroe counties were designated as attainment for particulate matter (PM 2.5) in November 2009 (Federal Register, 2009). Air quality in Houston County, which includes Robins AFB, is currently classified as an attainment area (i.e., pollutant levels are below the NAAQS standards).

### 3.2.2 Air Emission Sources

The maintenance and repair of aircraft are the primary stationary sources of air emissions at Robins AFB. The large number of aircraft serviced on base, in combination with the variety of aircraft types and services performed, create a large and complex group of air emission sources. The primary emission sources include painting and depainting operations, solvent cleaning, chromium plating and anodizing. Other sources include fuel storage tanks, peaking power generators, boilers, and various sources of fugitive volatile organic compounds (VOCs).

The boilers on base are used primarily for generating steam for comfort heating of the buildings. Natural gas is used as the primary fuel, with No. 2 Diesel Fuel and Air Mixed Propane as backups for most of the large boilers.

**Proposed Action Area.** Air emissions within the Proposed Action Area are primarily mobile sources produced by aircraft utilizing the runway at base, and light traffic from vehicles accessing the Horse Creek area.

## 3.3 WASTE MANAGEMENT AND TOXIC MATERIALS

### 3.3.1 Wastewater

Sanitary sewage generated by Robins AFB is treated at the sanitary treatment plant (STP), and effluent is monitored for biological oxygen demand, chemical oxygen demand, fecal coliform bacteria, pH, oil and grease, ammonia nitrogen, selected metals, total suspended solids, total phenols, and total residual chlorine. Discharges are currently within National Pollutant Discharge Elimination System (NPDES) permit limits.

Base industrial wastewater is processed through one of two industrial wastewater treatment plants. Industrial wastewater treatment plant (IWTP) No. 1 treats all industrial wastewater with the exception of waste from the Plating Shop, which is processed at IWTP No. 2. Treated effluent from IWTP No. 1 receives additional treatment at the STP. The treated effluent from the STP and IWTP No. 2 is collected in a pump station and discharged to the Ocmulgee River through a single pipe.

The IWTP system currently is able to treat base industrial wastewater to within permit discharge limits. This should not be affected by normal process modifications in the future. Recent process changes have reduced the amount of hazardous chemicals (particularly cyanide) in industrial wastewater, and ongoing programs to minimize use of hazardous materials on base should effectively increase the capacity of the IWTP to meet discharge limits.

**Proposed Action Area.** There is no sanitary sewer service and no industrial wastewater is generated in or near the Proposed Action Area. Industrial and sanitary wastewater is pumped through a force main that crosses the southern portion of the airfield and floodplain and discharges to the Ocmulgee River. The Horse Creek Ditch formerly carried discharges from the sanitary and wastewater treatment plants, before the force main was constructed.

### 3.3.2 Solid Waste

Solid wastes are generated from all areas of Robins AFB, including base housing, municipal operations, office complexes, industrial facilities, and construction/demolition areas. An *Integrated Solid Waste Management Plan* (ISWMP) has been developed to establish an integrated approach to dealing with solid waste management issues at Robins AFB (Robins AFB, 2010). The approach includes source reduction, recycling and disposal. Solid waste must be disposed of in accordance with Section 01560 Environmental Requirements, and Section 01572 Construction & Demolition Waste Management of the Robins AFB Civil Engineering Specifications. Reuse, recycling, and composting are strongly encouraged. All scrap pipe, wire, and metal is recycled through the Base Qualified Recycling Program (QRP) Recycling Center.

Solid wastes that cannot be recycled are collected and transported to the Houston County Landfill for disposal. All potentially hazardous or contaminated waste must be sampled to ensure it is properly characterized and reviewed by 78 CEG/CEAN. Wastes contaminated with lead-based paint (LBP), asbestos-containing material (ACM), or other hazardous materials at levels below the regulatory hazardous waste threshold require the submission of a Special Waste Acceptance Application with analytical data to 78 CEG/CEAN in order to obtain preapproval for disposal at Houston County Landfill prior to start of work.

Houston County has committed to providing solid waste disposal services to Robins AFB and has a permitted facility with 40 years of useful life. Approximately 50 years of additional capacity could be acquired through expansion of the landfill if needed. Solid wastes destined for recycling are collected at various locations on base in waste-specific containers, or are turned in to the Defense Reutilization and Marketing Office (DRMO).

**Proposed Action Area.** No solid waste is currently generated in the Proposed Action Area.

### 3.3.3 Hazardous Materials and Waste

Robins AFB has implemented a hazardous waste reduction plan that focuses on reducing or eliminating use of hazardous materials. Hazardous materials are stored and handled in

accordance with Occupational Safety and Health Administration (OSHA) regulations 29 Code of Federal Regulations (CFR) 1910.1200(e) through (h), *Hazard Communication.* Hazardous waste is managed under Resource Conservation and Recovery Act (RCRA) S*tandards Applicable to Generators of Hazardous Waste* (40 CFR Part 262), Georgia Rule 391-3-11, *Hazardous Waste Management*, and Robins AFB's Hazardous Waste Facility Permit. Universal waste is stored and handled in accordance with the *Standards for Universal Waste Management* (40 CFR Part 273). All hazardous waste is handled and disposed of in accordance with Robins AFB's *Hazardous Waste Management Plan* (HWMP) and all local, state and federal regulations.

**Proposed Action Area.** No hazardous materials, nor universal waste, are stored or generated within the Proposed Action Area. There are no IRP sites or environmental cleanup systems operating near the Proposed Action Area.

### 3.3.4 Toxic Materials

A base-wide asbestos survey for friable ACM was completed in March 1988. Known friable ACM was then removed in four phases, and continues to be removed from base facilities through renovation and construction activities. ACM and LBP surveying and sampling are included in renovation and construction project activities. All identified and potential ACM and LBP are addressed and maintained in accordance with applicable state and federal regulations.

Robins AFB completed inspection and removal of all transformers and other large capacitors containing polychlorinated biphenyls (PCBs) at concentrations greater than 50 parts per million in July 1991, thereby achieving "PCB-free" status. Base PCB management programs now focus on proper disposal of smaller capacitors, including fluorescent light ballasts that are not regulated under the Toxic Substances Control Act (TSCA), but pose a risk of liability under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) if they are disposed of as municipal solid waste and contaminate municipal landfills.

**Proposed Action Area.** No ACM, LBP, or PCB-containing equipment is located within the Proposed Action Area.

## 3.4 NOISE ENVIRONMENT

The noise environment at Robins AFB is dominated by aircraft operations, primarily from the KC-135R, C-130E/J, E-8C, EC-137, F-15, C-5, and C-17, along with numerous aircraft in transit. Light civilian aircraft and civilian cargo planes also operate at Robins AFB on a limited basis (USAF, 1993). During FY06, Robins AFB had an average of 79.7 flight operations per day with a total of 28,698 operations per year. Flight patterns at Robins AFB were established to: avoid heavily populated areas; concur with Air Force criteria regarding speed, rate of climb, and turning radius for each aircraft type; minimize noise levels, especially at night; and minimize conflict with civilian aircraft. To further help minimize noise levels, normal base operations avoid late-night engine runups or departures.

The most recent published noise modeling results for Robins AFB (USAF, 1998) indicated day-night average noise level (DNL) zones of 65 to 70 dB and 70 to 75 dB extending off base. Most of the land under the noise contours extending off base is undeveloped, and this land likely will not be developed since it is within the Ocmulgee River floodplain.

**Proposed Action Area.** Noise in the Proposed Action Area is primarily generated by aircraft on approach, landing and take-off, and during maintenance-related engine runs.

## 3.5 BIOLOGICAL ENVIRONMENT

The biological environment and ecology of Robins AFB is highly diverse, containing several distinctive vegetation communities as well as numerous wildlife habitats and species (Robins AFB, 2007b).

### 3.5.1 Flora

**Proposed Action Area.** Floodplain cover type in the Proposed Action Area is classified as Mixed Bottomland Hardwood and Water Tupelo Forest (Robins AFB, 2007c). The old growth bottomland hardwood forest is comprised of a mosaic of plant communities that differ in structure and composition because of differing hydrologic regimes that range from seasonal to

semi-permanent flooding. The largest vegetative association is seasonally-flooded bottomland hardwoods dominated by oaks and other broad-leaved deciduous hardwoods that vary in age and size (Robins AFB, 2007b). The forest floor is commonly flooded during spring and dry during the summer months. Interspersed throughout the bottomland forest are semi-permanently flooded tupelo and cypress-gum sloughs and a backwater flat that is dominated by overcup oak (*Quercus lyrata*).

The dominant species of canopy trees in the bottomland forest include laurel oak (*Quercus laurifolia*), cherrybark oak (*Quercus pagoda*), overcup oak, swamp chestnut oak (*Quercus michauxii*), American elm (*Ulmus americana*), green ash (*Fraxinus pennsylvanica*), sweetgum (*Liquidambar styraciflua*), blackgum (*Nyssa sylvatica*), water tupelo (*Nyssa aquatica*) and water hickory (*Carya aquatica*). The understory in the bottomland forest is generally sparse due to the seasonally flooded conditions; however, areas outside of the flood zone possess dense shrub and vine layers. The understory is dominated by peppervine (*Ampelopsis arborea*), giant cane (*Arundinaria gigantea*), stiff dogwood (*Cornus foemina*), American hornbeam (*Carpinus caroliniana*) and Virginia sweetspire (*Itea virginica*). The herbaceous layer is sparse and includes poison ivy (*Toxicodendron radicans*), dwarf palmetto (*Sabal minor*), and needle palm (*Rhapidophyllum hystrix*). The number of plant species increases considerably where sunlight is able to penetrate to the forest floor. Plants identified in these areas include poison ivy, lizard's tail (*Saururus cernuus*), cardinal flower (*Lobelia cardinalis*), aquatic milkweed (*Ascelpias perennis*), Eastern bluestar (*Amsonia tabernaemontana*), mints (*Mentha* spp.), nodding ladies' tresses (*Spiranthes cernua*), clustered Blacksnakeroot (*Sanicula odorata*), Allegheny monkeyflower (*Mimulus ringens*) and several species of sedges (*Carex* spp.) and grasses. In floodplain areas that have been disturbed by human or animal activity, exotic or invasive species may be found.

### 3.5.2 Fauna

**Proposed Action Area.** The highest diversity of birds and other wildlife on base can be found in the undeveloped bottomland floodplain. Horse Creek and the associated wetlands and floodplain habitats support a diverse assemblage of mammals, fish, reptiles and amphibians, including eastern cottonmouth (*Agkistrodon piscivorus*) and the American alligator (*Alligator*

*mississippiensis*). Feral hog (*Sus scrofa*), black bear (*Ursus americanus*), deer, frogs, toads, and salamanders are among the abundant wildlife species in the bottomland hardwood swamp forest habitat. From mid-October to early March, huge numbers of wintering blackbirds roost during the evening hours in the river forest east of base. Large blackbird flocks are often seen following the tree line of the bottomland hardwood forest along the eastern side of the airfield as they travel to crop fields in Houston County to feed on waste grain during the day, and back again in the evening when they overfly the airfield as they return to their roost.

### 3.5.3 Endangered, Threatened and Sensitive Species

No threatened, endangered or sensitive plant or animal species or their habitats are located on base except for the American alligator (*A. mississippiensis*), which is listed because of similarity of appearance to the federally endangered American crocodile (*Crocodylus acutus*). State plant species of concern do occur on base, but no occurrences have been documented within the Proposed Action Area.

## 3.6 CULTURAL RESOURCES

The archeological and cultural resources of Robins AFB are summarized in the *Integrated Cultural Resources Management Plan* (ICRMP) (Robins AFB, 2005). The base has been completely surveyed for archaeological sites and historic structures/districts, and the survey work has been reviewed and accepted by the Georgia Department of Natural Resources Historic Preservation Division (HPD) / State Historic Preservation Office (SHPO). In 2003, an archaeological evaluation and soil survey mapped areas on base with intact soil profiles for future archaeological investigations. This report showed that the soil over the entire airfield and many adjacent areas was found to have been significantly disturbed by construction activities that took place between the mid 1940s and early 1960s (Robins AFB, 2003).

**Proposed Action Area.** Two archaeological occurrences (O.29 and O.30) have been reported on the floodplain east of Horse Creek. These occurrences are well to the east and southeast of the heavily disturbed area of the bridge crossing location and away from where the bridge construction would occur. A designated occurrence is a site where ten or fewer artifacts have

been recovered. Both occurrences are prehistoric; O.29 is believed to represent Woodland/Late Mississippian culture, while O.30 is believed to represent Late Mississippian culture. Neither site has received further testing, although additional reconnaissance at O.30 yielded no additional artifacts.

## 3.7 SOCIOECONOMIC ENVIRONMENT

Socioeconomic resources include the basic attributes and resources associated with the human environment. In particular, this includes population and economic activity. Economic activity typically encompasses employment, personal income and industrial growth.

**Robins AFB Environs.** Based on review of U.S. Census Bureau data (U.S. Census Bureau, 2007), Robins AFB has a minority population greater than 35 percent and less than 5 percent of the Robins AFB population is below poverty level. The majority of the area adjacent to Robins AFB has a minority population greater than 40 percent and greater than 25 percent of the population is below poverty level (U.S. Census Bureau, 2007). Houston County has a minority population of approximately 30 percent and approximately 10 percent of Houston County is below poverty level (U.S. Census Bureau, 2007).

**Proposed Action Area.** The Proposed Action Area is within the expansive Ocmulgee River floodplain, well inside base property south of the airfield.

## 3.8 TRANSPORTATION AND SAFETY

At Robins AFB, safety issues are those that directly affect the protection of human life and property, and principally involve aviation, munitions and fire prevention. In addition, Air Force personnel are protected by observing Air Force Occupational Safety and Health (AFOSH) standards and RCRA.

**Proposed Action Area.** Aircraft routinely fly over the bottomland hardwood swamp east of the runway. The access road to the Horse Creek bridge crossing connects to Hannah Road south of

the airfield. The road itself is a dirt/partially paved path wide enough to accommodate single lane traffic accessing the parking area at the bridge crossing.

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# 4.0 ENVIRONMENTAL EFFECTS

This chapter describes the potential environmental effects of implementing the Proposed Action and the No-Action Alternative. Potential effects of the Proposed Action are based on the description of the action as presented in **Section 2**, and existing environmental conditions of the project area as presented in **Section 3**. Potential effects from the No-Action Alternative address effects as they would occur in the future without implementation of the Proposed Action.

## 4.1 PHYSICAL ENVIRONMENT

### 4.1.1 Topography

#### *4.1.1.1 No-Action Alternative*

Under the No-Action Alternative, topography of Robins AFB would remain unchanged because no construction associated with bridge replacement would occur. Implementation of the No-Action Alternative would result in neither significant positive nor significant negative effects on topography at or near Robins AFB.

#### *4.1.1.2 Proposed Action*

The ground surface on top of the creek bank would be disturbed during placement of the new concrete abutments for the bridge. The presence of the new concrete abutments that are built on the existing foundations would result in a minor, permanent alteration in topography at the bridge crossing. However, the Proposed Action would result in no significant negative or significant positive effects on topography.

### 4.1.2 Surface Waters

#### *4.1.2.1 No-Action Alternative*

Implementation of the No-Action Alternative would result in no significant positive or significant negative effects on surface waters near Robins AFB, because no construction would occur. Surface water quality would remain unchanged, and surface waters are not currently being significantly impacted by base operations, although the collapsed bridge pipes are corroding. The collapsed pipes would continue to impede the passage of water and floating debris at the bridge location.

#### *4.1.2.2 Proposed Action*

The ground surface on top of the creek bank would be disturbed by construction of the new bridge abutments that are built on existing foundations. However, the Proposed Action would not cause significant adverse impacts to surface waters in or near Horse Creek because the base uses Best Management Practices (BMPs) during the course of day-to-day operations, and plans to use appropriate BMPs during construction to protect the creek from erosion and sedimentation. No fill material such as soil or bridge pillars would be placed in the creek, and no excavation would occur in the creek channel below the ordinary high water mark. Any vegetation disturbance would be kept to a minimum, and any disturbance to the soil or stream bank would be appropriately stabilized during and after construction is completed. The new bridge abutments would represent a minor, but insignificant increase in impermeable surface that would not increase storm water runoff. See **Section 4.1.5.2** for further discussion of potential impacts to surface waters from soil erosion and storm water runoff, and further BMP activities.

The Proposed Action would not require coverage under NPDES Permit GAR100001 because the site size would be less than 0.4 hectare (1 acre). Georgia Environmental Protection Division (EPD) has stated that the bridge replacement would be exempt from Stream Buffer Variance requirements because it involves replacing a pre-existing transportation structure on the same footprint as the previous bridge. The Proposed Action would result in neither significant negative nor significant positive effects on surface waters.

### 4.1.3 Floodplains

#### *4.1.3.1 No-Action Alternative*

Under the No-Action Alternative, floodplain characteristics would remain unchanged. Implementation of the No-Action Alternative would cause no significant positive or significant negative effects on floodplain characteristics near Robins AFB.

#### *4.1.3.2 Proposed Action*

The Proposed Action would have insignificant, temporary effects on the floodplain in the immediate work area because of the placement of the bridge abutments that are built on the existing foundations, but construction activities would not cause significant adverse impacts to floodplain characteristics. This is because the base uses BMPs during the course of day-to-day operations, and plans to use BMPs (such as hay bales or silt fencing) to control erosion from storm water runoff so as not to cause significant adverse impacts. Aside from the insignificant alteration of the floodplain due placement of concrete bridge abutments, the floodplain and flood zone characteristics within the Proposed Action Area would not change, and there would be no effect on the function of surface water conveyance or flood storage capacity. The Proposed Action would result in neither significant negative nor significant positive effects on floodplains.

Prior to performing construction projects within a floodplain, the Air Force must investigate and exhaust all potential alternatives that would avoid working within floodplain resources. This requirement is consistent with Executive Order (EO) 11988, *Floodplain Management*, and the wetlands/floodplains compliance responsibilities of the Air Force per Air Force Instruction (AFI) 32-7064. EO 11988 addresses floodplain management and requires that the functions of floodplains be considered in the decision-making process. Adverse impacts to floodplains may be acceptable only if there is no practicable alternative. Since Horse Creek flows through the floodplain and the bridge must be replaced within the existing footprint because of the location of the existing access road, there is no practicable alternative that would meet the project requirements. Therefore, the Proposed Action must be located within the floodplain. 78

CEG/CEAO has prepared a Finding of No Practicable Alternative (FONPA) to explain the necessity of performing this action in the floodplain.

### 4.1.4 Wetlands

#### *4.1.4.1 No-Action Alternative*

Under the No-Action Alternative, the wetlands would not be impacted. Implementation of the No-Action Alternative would cause neither significant positive nor significant negative effects to the wetland characteristics within or near the proposed project area.

#### *4.1.4.2 Proposed Action*

Implementation of the Proposed Action would result in construction activities adjacent to and over jurisdictional Waters of the United States (WoUS) because of proximity to and orientation of the access road and location of the failed bridge. The Proposed Action would result in neither significant negative nor significant positive effects on wetlands. The base uses BMPs during the course of day-to-day operations to control erosion and storm water runoff from construction areas, and plans to use BMPs during the bridge replacement. The contractor's daily operations using BMP's would eliminate or alleviate erosion of sediment and other temporary potential adverse effects such as to be insignificant. Concrete abutments would be placed on existing foundations on the creek bank, and no abutment or support pile would be placed below the ordinary high water mark or in the creek.

Prior to performing projects within a wetland, the Air Force must investigate and exhaust all potential alternatives that would avoid or minimize impact to wetland resources and compensate for unavoidable wetland impacts. This requirement is consistent with EO 11990 (as amended), *Protection of Wetlands*, Section 404 of the Clean Water Act, and the wetlands compliance responsibilities of the Air Force per AFI 32-7064. Adverse impacts to jurisdictional wetlands may be acceptable only if there is no practicable alternative, potential impacts have been minimized, and compensatory mitigation is provide for unavoidable adverse impacts. Because of the location of the existing access road and the need to replace the failed bridge within the

same footprint, there is no practicable alternative that would meet the project requirements. Therefore, the Proposed Action must be located within the wetland area. 78 CEG/CEAO has prepared a FONPA to explain the necessity of working in the subject wetland areas. The base Natural Resources Manager coordinated the Proposed Action with the U.S. Army Corps of Engineers (USACE) Savannah District and the state on August 16, 2010, who determined that the Proposed Action would not require a Clean Water Act Section 404 permit or a state stream buffer variance because it was a bridge replacement within the same footprint of the original bridge.

### 4.1.5 Storm Water

#### *4.1.5.1 No-Action Alternative*

Implementation of the No-Action Alternative would cause neither significant positive nor significant negative effects to storm water, because no changes to storm water drainage would occur in the project area, and storm water is not currently significantly affected by onsite operations.

#### *4.1.5.2 Proposed Action*

No significant positive or negative effects on storm water would occur in or near the Proposed Action Area. The Proposed Action would not require coverage under NPDES Permit GAR100001 because the site size would be less than 0.4 hectare (1 acre). Appropriate BMPs for protecting surface water from sedimentation effects would be in place during construction activities. As discussed in **Section 4.1.2.2,** the base uses BMPs during the course of day-to-day operations, and plans to use BMPs (such as hay bales or silt fencing) as necessary to control erosion and transportation of sediment from storm water runoff so as not to cause significant adverse impacts. The insignificant alteration of the floodplain due to placement of concrete bridge abutments would not change flood zone characteristics, and there would be no effect on the function of surface water conveyance or flood storage capacity.

Federal development projects must comply with the storm water design requirements of the Energy Independence and Security Act (EISA [Title 42, US Code, Section 17094]). The EISA requires that federal facility projects over 465 gross square meters (5,000 gross square feet) must "*maintain or restore, to the maximum extent technically feasible, the predevelopment hydrology of the property with regard to the temperature, rate, volume, and duration of flow.*" Department of Defense (DoD) policy on implementing Section 438 of the EISA states that new facilities or expanded facilities with a new footprint greater than 465 gross square meters (5,000 gross square feet) of horizontal hard surfaces (such as building areas and pavements) must comply with the EISA requirements using low impact development (LID) techniques to achieve an overall design objective of maintaining predevelopment hydrology and preventing any net increase in storm water runoff to the maximum extent technically feasible. The maximum extent technically feasible criterion requires full employment of accepted and reasonable storm water retention and reuse technologies (e.g., bio-retention areas, permeable pavements, cisterns/recycling, and green roofs), subject to site and applicable regulatory constraints. The Proposed Action is exempt from this requirement because the area of new hard surfaces created by the bridge abutments is well below the 465 gross square meters (5,000 gross square feet) threshold for new facilities.

### 4.1.6 Geology and Soils

#### *4.1.6.1 No-Action Alternative*

No changes to geology or soils would occur under the No-Action Alternative because no construction would occur. Under the No-Action Alternative neither significant positive nor significant negative effects would occur.

#### *4.1.6.2 Proposed Action*

Geological features would not be affected by the Proposed Action because the bridge replacement would involve minimal disturbance of the ground surface for placement of the bridge abutments. The potential for soil erosion to adversely affect surface water quality would be minimized because the base uses BMPs during the course of day-to-day operations, and plans

to use BMPs (such as hay bales or silt fencing) if necessary to control erosion from storm water runoff so as not to cause significant adverse impacts.

### 4.1.7 Groundwater

#### *4.1.7.1 No-Action Alternative*

Implementation of the No-Action Alternative would result in no significant positive or significant negative effects to groundwater, because no changes to groundwater resources would occur.

#### *4.1.7.2 Proposed Action*

Implementation of the Proposed Action would not significantly affect groundwater because any excavation for the bridge abutment/footing would be relatively shallow and would not intersect groundwater. The shallow excavation for the bridge abutment and placement of the footing would not affect groundwater quality, and no dewatering is anticipated.

### 4.1.8 Water Supply and Drinking Water

#### *4.1.8.1 No-Action Alternative*

No effects to water resources or drinking water would occur under the No-Action Alternative; hence the No-Action Alternative would result in no significant positive or significant negative effects on water supply or drinking water.

#### *4.1.8.2 Proposed Action*

No potable water supply wells or systems are located in or near the Proposed Action Area. The Proposed Action would not require significant use of potable water. Therefore, implementation of the Proposed Action would not significantly affect the existing water supply or use at Robins AFB.

## 4.2 AIR QUALITY

Potential air emissions resulting from the Proposed Action and No-Action Alternative have been evaluated based on the Clean Air Act (CAA) as amended. The effects of an action are considered significant if they increase ambient air pollution concentrations above NAAQS, contribute to an existing violation of NAAQS, or interfere with or delay the attainment of NAAQS.

### 4.2.1 No-Action Alternative

No changes to air emissions would occur under the No-Action Alternative. Implementation of the No-Action Alternative would result in neither significant positive nor significant negative effects to air emissions.

### 4.2.2 Proposed Action

Since the area of the proposed action is attainment for all criteria pollutants, the conformity determination provisions of CAA Sec. 176(c) do not apply to this Proposed Action. Operation of equipment and transport of the bridge structure would increase emissions of carbon monoxide (CO), hydrocarbons and nitrogen oxides (NOx). The increase in air emissions would be temporary and total vehicle emissions would be insignificant. There would be no filling or grading that would create fugitive dust. The Proposed Action would result in no increase in stationary or mobile air emissions following replacement of the bridge. Based on this analysis, the Proposed Action would not cause any violation of the NAAQS and would not significantly increase air emissions at or near the project area.

## 4.3 WASTE MANAGEMENT AND TOXIC MATERIALS

### 4.3.1 Wastewater

#### *4.3.1.1 No-Action Alternative*

Implementation of the No-Action Alternative would not result in changes in sanitary or industrial wastewater generation. Thus, no significant adverse or significant positive impacts to the environment would occur as it relates to wastewater.

#### *4.3.1.2 Proposed Action*

The Proposed Action would not generate industrial wastewater or sanitary wastewater. Neither significant positive nor significant negative effects on sanitary or industrial wastewater generation or treatment would occur.

### 4.3.2 Solid Waste

#### *4.3.2.1 No-Action Alternative*

Implementation of the No-Action Alternative would not result in significant adverse or significant positive impacts on the environment, because there would be no change in solid waste generation, or handling and disposal practices.

#### *4.3.2.2 Proposed Action*

The Proposed Action would involve removal of the failed pedestrian bridge structure. The small structure was comprised principally of metal pipes spanning Horse Creek. The small amount of bridge debris would be removed and recycled or disposed as applicable. Therefore, implementation of the Proposed Action would result in no significant positive or negative impacts to solid waste generation, handling and disposal.

### 4.3.3 Hazardous Materials and Waste

#### *4.3.3.1 No-Action Alternative*

The No-Action Alternative would cause no significant positive or negative environmental effects related to hazardous materials or hazardous waste, because use of hazardous materials would not change under this alternative.

#### *4.3.3.2 Proposed Action*

Implementation of the Proposed Action would cause neither significant positive nor significant negative environmental effects related to hazardous materials or hazardous waste. During bridge replacement activities, hazardous materials such as fuels for equipment and vehicles would be used. Materials would be used and handled in accordance with Robins AFB's HWMP and all applicable local, state and federal regulations. No hazardous materials or hazardous wastes would be generated as part of the Proposed Action.

### 4.3.4 Toxic Materials

#### *4.3.4.1 No-Action Alternative*

The No-Action Alternative would cause no significant positive or significant negative environmental effects related to toxic materials or waste, because toxic materials would not be affected.

#### *4.3.4.2 Proposed Action*

Implementation of the Proposed Action would cause neither significant positive nor significant negative environmental effects related to toxic materials. No ACM, LBP, or PCB-containing equipment or other toxic material would be used in or affected by the Proposed Action. No toxic waste would be encountered during construction or generated after completion of the Proposed Action.

## 4.4 NOISE ENVIRONMENT

### 4.4.1 No-Action Alternative

The No-Action Alternative would have neither significant positive nor significant negative impacts on the existing noise environment, because the noise environment at Robins AFB would not change.

### 4.4.2 Proposed Action

Construction associated with bridge replacement would result in a temporary increase in noise in the immediate vicinity of the project area. However, this temporary noise increase would be of short duration and insignificant in comparison to the existing noise environment that is dominated by noise generated by aircraft departures and landings. Following completion of the Proposed Action, the only noise generated would be from occasional vehicle traffic and ATV use. The Proposed Action would not result in significant positive or significant adverse effects on the noise environment at Robins AFB or in the surrounding area.

## 4.5 BIOLOGICAL ENVIRONMENT

### 4.5.1 No-Action Alternative

The No-Action Alternative would have neither significant positive nor significant negative impacts on the biological environment. No biological resources would be disturbed.

### 4.5.2 Proposed Action

The principal effects from Horse Creek bridge replacement would be a temporary increase in noise and traffic from equipment. Wildlife near the airfield is accustomed to the significant noise from aircraft departure and landing that dominates the noise environment in the Proposed Action Area. Displaced wildlife would relocate to adjacent, undisturbed bottomland hardwood swamp areas of the extensive Ocmulgee River floodplain complex. The relatively small area of

floodplain habitat affected by construction of the concrete bridge abutments within the existing bridge footprint would not result in significant adverse effects on biological resources.

No federal-listed endangered, threatened or sensitive species would be affected by the Proposed Action, because none are known to be present on or near the site. The American alligator is federally-listed because of its similarity to the endangered crocodile, and the alligator exists on Robins AFB, but has not been identified at the site. State plant species of concern do occur on base, but no populations have been identified at the bridge crossing location and none would be affected by the Proposed Action. Based on this analysis, the Proposed Action would not have a significant adverse impact on biological resources in or near the Proposed Action Area.

## 4.6 CULTURAL RESOURCES

### 4.6.1 No-Action Alternative

The No-Action Alternative would have no effect on cultural resources. Cultural resources on Robins AFB would continue to be managed and protected as required by federal and state agencies.

### 4.6.2 Proposed Action

Previous base archaeological surveys have not identified any archaeological resources at the bridge replacement site. There are no historic building resources near the bridge location. The new bridge would be placed within the existing bridge footprint. Therefore, no archaeological or historic building resources would be affected by implementation of the Proposed Action. In the event that archaeological resources are inadvertently discovered during construction, the Environmental Management Branch would be notified immediately and further ground disturbing activities would cease in that area. Identified resources would be managed in compliance with Federal law and Air Force regulations. The Georgia Department of Natural Resources, Historic Preservation Division, reviewed a draft of this Environmental Assessment, and, on September 22, 2010, provided a written opinion that "the project as proposed will have No Effect to historic properties." A copy of the opinion is set forth at **Appendix B**.

## 4.7 SOCIOECONOMIC ENVIRONMENT

### 4.7.1 No-Action Alternative

The socioeconomic environment would not change significantly under the No-Action Alternative, when compared to the economy associated with Robins AFB and the Warner Robins area. Robins AFB would continue to exert a significant positive impact on the economy of the Middle Georgia region of influence.

Minority populations and low-income populations would not be significantly adversely or significantly positively impacted under the No-Action Alternative. Nor would significant environmental health risks or safety risks to children occur. Hence, implementation of the No-Action Alternative would result in neither significant positive nor significant negative effects to the local socioeconomic environment.

### 4.7.2 Proposed Action

The Proposed Action would provide a minor economic benefit from expenditures for the project. No significant adverse environmental impacts would occur as a result of the Proposed Action, and no populations (minority, low-income, or otherwise) would be disproportionately impacted. Hence, the Proposed Action would not result in significant positive or significant adverse socioeconomic impacts.

## 4.8 TRANSPORTATION AND SAFETY

### 4.8.1 No-Action Alternative

Under the No-Action Alternative, local traffic patterns and volume would not be affected. However, the transportation to base areas east of Horse Creek would be impeded as the only access to property east of the creek would be by boat. This would increase the safety hazards associated with the use of designated hunting areas and routine security patrols, maintenance of the City of Warner Robins gas pipeline, and Georgia DNR access to state-owned property

between base and the Ocmulgee River. Thus, the No-Action Alternative would perpetuate the less than optimum safety conditions that currently exist.

### 4.8.2 Proposed Action

Delivery and installation of the prefabricated pedestrian bridge would not significantly affect transportation on base. There would be minimal construction traffic associated with the bridge replacement. Contractors and heavy equipment operators would adhere to all applicable safety regulations and guidelines. The bridge replacement would improve transportation to areas east of Horse Creek and improve safety for pedestrians accessing property east of the creek by eliminating the need to use a boat to cross the creek. In particular, the contractor would be required to adhere to OSHA requirements on the worksite. These would require, for example, adequate training, operation, and protection for the workers. Additionally, workers that use the site after completion would be required to adhere to similar requirements when working in conjunction with the access provided by the action.

## 4.9 CUMULATIVE IMPACTS

Council on Environmental Quality (CEQ) regulations stipulate that potential environmental impacts resulting from cumulative impacts should be considered in the EA. A cumulative impact is the impact on the environment which results from the incremental impact of an action when added to other past, present, and reasonably foreseeable future actions. In accordance with NEPA, a discussion of cumulative impacts resulting from projects that are proposed, currently under construction, recently completed, or anticipated to be implemented in the near future is presented below.

Because of the isolated location of the bridge crossing, and the fact that the bridge would be replaced within the existing footprint of the failed bridge, only one current/future and one future project was identified as potentially producing cumulative environmental effects in the area of the Proposed Action Site. No other projects that would have incremental environmental effects were identified.

**Clear Zone Improvements (current/future):** Proposed improvements within the Clear Zone (CZ) and Graded Clear Zone (GCZ) on the south end of the runway at Robins AFB were identified as potentially producing cumulative effects. These improvements are needed to comply with the requirements of Unified Facilities Criteria (UFC) 3-260-01, *Airport and Heliport Planning and Design*, (DoD, 2008) to meet Air Force Materiel Command's (AFMC) directive to eliminate waivers for airfield operations, to meet objectives of the Bird/Wildlife Aircraft Strike Hazard (BASH) Plan (Robins AFB, 2007a) by preventing the growth of wildlife habitat in this area, and eliminating the substantial annual cost of cutting vegetation that grows in the wetlands adjacent to the runway, and provides cover for wildlife that access the airfield (Robins AFB, 2009). The proposed improvements within the CZ and GCZ would involve filling approximately 7.9 hectares (19.5 acres) of wetlands, including approximately 0.8 hectares (two acres) within the 100-year floodplain, to provide level topography that can be maintained in turf grass adjacent to the runway, and rerouting existing storm water drainage through the area.

The project location is determined by the proximity of the runway and the dimensions of the CZ and GCZ, and there is no practicable alternative to construction within the 100-year floodplain and filling adjacent wetlands. Construction would permanently alter topography to meet the UFC CZ criteria and cause temporary and insignificant impacts to surface water, floodplain, wetlands, storm water, geology and soils, air quality, the noise environment, biological environment, safety, and transportation. Operation after the Proposed Action would cause only insignificant adverse effects on air quality from minor vehicle emissions during airfield turf maintenance, and the wildlife displaced by the small area of wildlife habitat lost from filling the wetlands would be easily accommodated by the extensive natural areas adjacent to the proposed project site (Robins AFB, 2009). The purchase of wetland credits from a wetland mitigation bank would compensate for the unavoidable loss of wetlands. There would be no addition of impermeable land surface or personnel associated with the improvements. The Proposed Action would have short-term beneficial impacts on the socioeconomic environment from construction expenditures; improve airfield safety by reducing the potential adverse effects from an aircraft mishap during departure or landing and the risk of bird/wildlife strikes on the airfield.

**Clear Zone Tree Removal (future):** Proposed tree removal within the Clear Zone (CZ) and Accident Potential Zones (APZs) north and south of the runway at Robins AFB was identified as potentially producing cumulative effects. Portions of the CZs and APZs do not meet the obstructions to air navigation requirements of the UFC 3-260-01 because the

tops of some trees in the CZ areas and portions of the southern APZ I penetrate into the imaginary approach-departure clearance surface (or 'glide slope'). The purpose of the proposed tree removal is to reduce the height of trees that penetrate into the imaginary approach-departure clearance surface or exceed the UFC criterion of 3 meters (10 feet) below the clearance surface within the CZ and APZs. As a conservative measure, all trees with heights that extend higher than 4.5 meters (15 feet) below the elevation of the imaginary surface also would be removed. The tree removal is needed to protect the public, pilots, aircrew, aircraft and other Air Force property assets and to address the UFC minimum vertical clearance requirements for eliminating obstructions to air navigation.

The project location is determined by the orientation of the runway and accident potential zones and the dimensions of the CZ and APZ. The CZ and APZs encompass floodplain and wetland areas and developed and undeveloped property on and off base. Since the CZ is centered on the runway centerline and extends 915 meters (3,000 feet) from the end of the runway primary surface into the floodplain and the APZs extend more than 3,600 meters (11,000 feet) beyond the CZ, there is no practicable alternative to construction within the 100-year floodplain. Few trees (an area of approximately 8 hectares [20 acres]; 10 percent of the area) within the approach-departure surface of the northern CZ exceed minimum vertical clearance requirements, and only a few trees in APZ I immediately north of the northern CZ exceed minimum vertical clearance requirements. Much of the southern CZ is open-water and forested wetland. Approximately 21 hectares (52 acres) of trees (25 percent of the area) under the approach-departure surface in the southern CZ exceed minimum vertical clearance requirements, and approximately 60 hectares (148 acres) of trees (43 percent) under the approach-departure clearance surface within APZ I to the south exceed minimum vertical clearance requirements.

Removing trees within the CZ and APZs would have insignificant adverse impacts on surface waters, floodplains, wetlands and associated soils, air quality, biological resources, and cultural resources. The resulting change in forest composition and structure would result in insignificant adverse effects on wildlife species, such as understory birds that depend on forested bottomland habitat, while the change could benefit certain wildlife species that depend upon forest openings. The Proposed Action would produce a minor beneficial effect on socioeconomics from the purchase of goods and services. Air navigation safety would be improved by eliminating obstructions, while creating more open wetland areas would result in deeper, more open water areas

that would attract wading birds and wintering waterfowl and negatively impact BASH management.

Potential direct and cumulative effects of the above-listed projects would be addressed through environmental reviews, existing permit requirements and by permit modifications as necessary. The Proposed Action (the replacement of Horse Creek bridge within the bottomland hardwood swamp east of the southern CZ and APZs at Robins AFB) would result in temporary, minor adverse effects on topography, surface waters, floodplains, wetlands and associated soils, groundwater, air quality, noise, and biological resources in the immediate work area. After construction, there would be a minor adverse effect on topography in the immediate vicinity of the new bridge. However, the effects on these resources would be insignificant.

The CZ improvements and proposed CZ tree removal, including the Proposed Action, would have insignificant cumulative adverse effects on surface water related to temporary soil disturbance during construction activities. For each of these proposed projects, the base would use BMPs during the course of day-to-day operations to control erosion from storm water runoff and minimize potential adverse effects on surface water. Further, the timber contractor would use forestry BMPs during CZ tree removal, and it is likely that these projects would take place at different times, further reducing the potential for cumulative incremental adverse effects. Stumps would be left in place during CZ tree removal to minimize soil disturbance, and only minor land disturbance would be required to install the prefabricated pedestrian bridge.

There would be insignificant cumulative adverse effects on topography and floodplain resources resulting from the minor loss of floodplain area during CZ improvements, and no effect on topography from CZ tree removal. The Proposed Action and proposed CZ tree removal would not involve filling or other loss of floodplain area. Cumulative effects from the loss of flood water storage capacity in the Horse Creek/Ocmulgee River floodplain from the Proposed Action and the CZ improvements would not be significant, because there would be no fill associated with the Horse Creek bridge replacement, and the placing of fill for CZ improvements would result in no significant impact on the overall conveyance of storm water, and the remaining floodplain contains sufficient storage capacity to handle the displaced flood waters.

No wetland loss would occur with the Horse Creek bridge replacement or CZ tree removal. Although 7.9 hectares (19.5 acres) of wetland habitat would be lost during implementation of CZ improvements at the south end of the runway, this wetland loss would be offset in the region by compensatory mitigation. The temporary adverse effects on wetlands and permanent loss of wetland habitat locally would have only minor effects on wildlife, storm water, and surface water resources, because of the vast acreage of bottomland hardwood swamp and other wetlands throughout the base and adjoining Ocmulgee River floodplain east of base. There would be no significant cumulative adverse effect on wetlands.

There would be no significant adverse cumulative effect on groundwater. The CZ improvements would result in near-ground-surface activities, but would not significantly affect ground water. Ground-disturbing activities during CZ tree removal would be minimal. Construction of the abutment/footing for the Horse Creek bridge replacement would be relatively shallow and would not intersect groundwater, and no dewatering is anticipated.

The construction/timbering phases related to these actions would result in a temporary increase in CO, hydrocarbon, and NOx emissions from the operation of heavy equipment and other vehicles. However, the temporary increase in air emissions from construction traffic and equipment would be inconsequential. Further, the duration of construction for the bridge replace would be very short, and construction activities for these actions would likely be carried out under different schedules, thereby precluding cumulative air emissions from construction equipment. None of the proposed actions was determined to have a significant adverse cumulative effect on air quality during operation, and there would be no change in air emissions under the Proposed Action after replacing the bridge.

There would be no significant cumulative adverse effect on biological resources. The CZ improvements on the south end of the runway would occur in previously disturbed land areas, with limited natural habitat that would support wildlife. The change in forest structure and composition resulting from CZ tree removal could be beneficial for some wildlife species that use forest openings for foraging. Alternatively, the change in forest structure would result in an insignificant adverse impact on understory bird species. The relatively small area of floodplain habitat affected by selective tree removal (about 89 hectares [220 acres] within the CZ and APZ

areas) and the minor area affected by bridge replacement in the original bridge footprint would not result in significant cumulative adverse effects on biological resources. Natural areas within the remainder of the extensive floodplain complex (almost 2,430 hectares [6,000 acres]) between upland portions of base and the Ocmulgee River) would easily accommodate any wildlife displaced by forest structure alteration or temporary noise effects.

Cumulative effects on other environmental resources would not occur, or effects would not be significant, because the proposed actions would result in only slight changes in environmental attributes of these resources, and significant positive or significant adverse incremental impacts for the Proposed Action or related actions have not been identified. Thus, a significant adverse cumulative effect would not occur from the implementation of the Proposed Action.

Implementation of the Proposed Action, the CZ improvements, and CZ tree removal would result in a cumulative improvement in personnel safety by reducing the risks associated with aircraft mishaps during departure and landing and the use of a boat to cross Horse Creek.

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# 5.0 LIST OF PREPARERS

**Charles Allen, P.E. – Independent Technical Reviewer, URS -** Mr. Allen has a B.S. in Civil Engineering, and is a Professional Engineer with over 35 years experience on a variety of NEPA environmental impact assessments, civil, geotechnical, and seismic engineering projects, Phase I and II Environmental Site Assessments, waste stream and pollution prevention projects, environmental permitting, and hazards analysis. He has served as the Independent Technical Reviewer for several NEPA EAs prepared on behalf of 78 CEG/CEAO and for several other federal agencies including U.S. Department of Veterans Affairs, U.S. Department of Justice, U.S. Army Corps of Engineers, U.S. Postal Service, among others.

**Kenneth Branton – Program Manager, URS -** Mr. Branton has a B.S. in Mining and Petroleum Engineering. He is a retired Lieutenant Colonel (Lt.Col.) from the U.S. Air Force with 22 years of service as a Bioenvironmental Engineer. Lt.Col. Branton served as the Deputy Director of Environmental Management at Robins AFB and the Chief of the Environmental Restoration Division from 1991-96. He also served as the Deputy Director of the Air Force Environmental Research Laboratory at Tyndall AFB from 1996-98. He completed the Shipley course on "*How to Manage the EIAP/NEPA Process: Air Force Specific (EIAP)"* in 1992 and has conducted environmental impact assessments and served as the Independent Technical Reviewer on numerous Air Force and FEMA projects. Mr. Branton has 10 years' experience as a consultant environmental engineer of which seven years has been at Robins AFB as a Senior Program Manager managing all types of environmental projects for the conservation, compliance, remediation, and pollution prevention programs.

**Larry Neal – Project Manager, URS** - Mr. Neal has a B.A. in biology and a M.S. in biological oceanography. He has more than 30 years of experience in NEPA documentation, environmental planning, and natural resource management involving projects for many DoD Departments, including the AF and Air Force Reserve Command (AFRC). He has more than 13 years experience in performing natural resources management, comprehensive planning, and NEPA compliance activities and studies at Robins AFB and in preparing associated technical deliverables. He has provided onsite staff support in NEPA, cultural and natural resources management to Headquarters AFRC. Since 1999, he has served as a Task Leader for many of

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**John Kaiser- Project Manager/ Technical Reviewer, AEROSTAR -** Mr. Kaiser has a B.S. in General Engineering and Physical Science. He is a retired Captain from the U.S. Navy with six years of active service, 24 years of Reserve Service, and over 30 years of engineering and management related experience, 17 of which have been in the environmental field. Mr. Kaiser has managed Program and Project level environmental scopes of work for federal, municipal, and private industry clients. He is very familiar with National Environmental Policy Act (NEPA) concerns and processes; he was the primary author for a major EA and FONSI at Cape Canaveral Air Force Station, (CCAFS) for the introduction of a new launch vehicle called the Falcon 9, developed by Space Exploration Corporation Inc. (SpaceX). He was also the primary author for an EA for runway extensions at CCAFS. He has reviewed many other NEPA documents and developed training programs for clients. He also has significant experience in a wide range of other environmental related areas including; hazardous waste management, planning documents, environmental site assessment reports, free product recovery reports, comprehensive site assessment and site characterization reports, closure reports, and risk-based corrective action

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# APPENDICES

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# APPENDIX A

# ROBINS AIR FORCE BASE BACKGROUND INFORMATION

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# 1.0 INTRODUCTION

This appendix describes the existing environment in the area potentially affected by the alternatives being evaluated. The chapter begins with a description of the location, history, and current missions of Robins AFB. The remainder of the chapter is organized based on descriptions of the components of the environment that may be affected, in the following order: physical environment, air quality, biological environment, cultural resources, land use, noise environment, safety, socioeconomic resources, infrastructure, and waste management. The effects of the alternatives on the baseline conditions of each environmental component are evaluated in Chapter 4, Environmental Consequences. Only sections relevant to the subject EA are included.

# 2.0 BASE DESCRIPTION, HISTORY, AND CURRENT MISSIONS

## 2.1 Base Description

Robins AFB is an 8,500-acre facility located in Warner Robins, Georgia. It is the home of the WR–ALC, which is responsible for the depot level overhaul and maintenance of the C-130 Hercules, C-5 Galaxy, and F-15 Eagle; logistics support and maintenance checks of the C-17 aircraft; manufacture and repair of aircraft avionics; and repair/modification of components for aircraft, missiles, drones, and helicopters worldwide. Robins AFB is the host to over 50 tenant organizations and is the largest industrial facility in Georgia, employing more than 26,000 people.

Approximately one-half of the area within Base boundaries has been developed in support of Base missions. Undeveloped areas support natural wetlands (2,300 acres) and timberland (1,150 acres), most of which occur within the Ocmulgee River, Horse Creek, and Sandy Run Creek floodplains.

## 2.2 Base History

Not relevant to this EA

## 2.3 Current Base Missions

Not relevant to this EA

# 3.0 PHYSICAL ENVIRONMENT

The physical environment of the study area is described below based on its principal components: physiography, including topography, surface waters, floodplains, and wetlands; geology; groundwater; and climate.

## 3.1 Physiography

### Topography

Robins AFB is located in central Georgia on the upper margin of the Inner Coastal Plain. The uplands of the Base lie in a subprovince of the Fall Line Hills called the Fort Valley Plateau (Clark and Zisa, 1976). Clark and Zisa (1976) describe this area as “distinct from the Fall Line Hills in that the broad, flat-topped interfluves are the dominant feature, there are fewer streams, and there is less local relief." The eastern portion of the Base is dominated by the Ocmulgee River and its broad floodplain. The erosion action of the Ocmulgee here has created bluffs, high floodplain, deep swamp, meander scars, loops, and oxbow lakes. Sandy Run Creek, along the southern boundary of Robins AFB, has a floodplain up to 2,000 feet wide with a line of low bluffs, five- to fifteen-feet high, to its north.

Elevations on Robins AFB range from a high of 296 feet to a low of approximately 235 feet in the southern section of the Base in the floodplain of the Ocmulgee River. Relief is generally minimal on most of the Base, rarely over 30 feet locally. The exceptions are the 40-foot high northeast- and east-facing bluffs near the central portion of the Base overlooking the floodplain of the Ocmulgee River. Several ridges less than ten feet above the average elevation of the Ocmulgee floodplain extend into the floodplain.

### Surface Waters and Floodplains

Most of the landforms on and around Robins AFB have been affected by the Ocmulgee River, which is one of the dominant watercourses in west-central Georgia and is part of the Altamaha River drainage. The flow of the Ocmulgee River at the United States Geological Survey (USGS) gauging station at Warner Robins has ranged from 422 (1981) to 3540 (1981) cubic feet per second (cfs), with a mean annual flow of 1070 cfs (USGS, 1982). The Ocmulgee is the sixth largest river in Georgia based on mean annual flow rate. It has one-twelfth the flow of the Altamaha, Georgia's largest river; one-ninth the flow of the Chattahoochee; and one-eighth the flow of the Savannah (USGS, 1982)

The floodplain of the Ocmulgee River is about three miles wide from bluff to bluff at Robins AFB. The distance from the westernmost bluff of the floodplain on the Base to the river averages about two miles. According to flood insurance rate maps of the Federal Emergency Management Agency (FEMA), nearly all of the Ocmulgee River floodplain at Robins AFB falls into Zone A, the area of 100-year floods (FEMA, 1996a and 1996b).

There are three man-made lakes and several smaller ponds on the Base. Duck Lake (8.3 acres in area) is located near the center of the facility. It was created in the 1940s by the construction of a dam (Warner Robins Street) across a natural drainage that empties into the Ocmulgee floodplain. Duck Lake acts as a retention/detention basin and is recharged solely by storm water. Scout Lake (22.4 acres) and Lake Luna (7.7 acres) are both excavated lakes located in the southeastern portion of the facility. Lake Luna was created in 1967-1968 by excavating the area and then lining the bottom with a low permeability material. This lake is recharged from a water supply well by storm water runoff. Scout Lake was created in the 1950s by excavation of the lake bottom. The lake is recharged by storm water runoff. Some of the ponds include Patton Pond (just east of Duck Lake) and Alligator Pond (just southeast of the runway area). Several unnamed bodies of standing water occur in old borrow pits on the northern portion of the Base.

The upland portion of Robins AFB is drained by four intermittent streams that flow west to east into the Ocmulgee floodplain. Surface water drainage on the northern portion of the Base generally flows from west to east from SR 247 to Horse Creek, then to the wetlands east of the Base, and eventually to the Ocmulgee River. Echeconnee Creek crosses the northern tip of the Base. Horse Creek is the primary perennial stream on the Base. It starts along the eastern perimeter of the runway area and flows southeast through the Ocmulgee floodplain wetlands before leaving Base property and entering the Ocmulgee River. A smaller, unnamed, intermittent stream runs from the discharge point of Duck Lake through Patton Pond and eventually into the floodplain wetlands. A larger stream, Sandy Run Creek, forms the southern boundary of the Base and has a floodplain up to almost 2,000 feet wide. Upstream of the Base, Sandy Run Creek receives the discharge from a sanitary wastewater treatment plant operated by the city of Warner Robins.

Storm water runoff can enter base from areas to the west principally through three storm water inlets; one near Building 380, one near Building 640, and one north of the Green Street Gate. Storm water from the two southern inlets flows east and eventually flows into the floodplain wetlands and Horse Creek east of base. Storm water from the Green

Street Gate inlet flows through a pipe that discharges into a tributary to Echeconnee Creek.

Storm water runoff from the northern portion of base flows north/northeast to the wetlands of the Ocmulgee River floodplain. Storm water from the north-central portion of base flows along natural, intermittent streams and man-made drainage features into Horse Creek. Storm water from the south-central portion of base flows into the intermittent streams that feed Duck Lake, then continues to flow east along the unnamed stream through Patton's Pond and into wetlands. Storm water on the southern portion of base flows along natural and man-made features to floodplain wetlands. Some storm water runoff collects in Scout Lake and Luna Lake. The natural drainage of storm water from the industrial areas on the southern portion of base flows to the floodplain wetlands of Sandy Run Creek.

**Wetlands**

The U. S. Army Corps of Engineers, in accordance with Section 404 of the Clean Water Act, has defined what are referred to as "jurisdictional" wetlands, as distinct from wetlands in the more general sense. Jurisdictional wetlands are wetlands that are delineated through the use of the *Federal Manual for Identifying and Delineating Jurisdictional Wetlands* (1989) and the 1987 *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory, 1987). The Fish and Wildlife Service has developed broader definitions for wetlands, as discussed in Cowardin et al. (1979). The National Wetlands Inventory, a subagency of the U.S. Fish and Wildlife Service, has mapped most of the wetlands of the Atlantic Coastal Plain using the classification system put forth in Cowardin et al. (1979).

**Table 3-1** summarizes the acreages of Robins AFB covered by each category of wetlands and the percentages of the total wetland acreage represented by each category. The jurisdictional wetlands on the Base previously have been delineated, and a new wetland delineation study currently is underway. Approximately 32 percent of Robins AFB is wetlands. Significantly more than half of all the wetlands on the Base are associated with the Ocmulgee floodplain. Wetlands in the floodplain of the Ocmulgee River are seasonally and semi-permanently flooded, while wetlands in the floodplain of Sandy Run Creek are temporarily flooded. Most of the wetlands are broad-leaved deciduous, forested, palustrine (PFO1) wetlands.

**Table 3-1. Acreages and Percentages of Robins AFB Covered By Wetlands**

| Category | Description | Acres | Percent of Base Total |
|---|---|---|---|
| PEM1C | Emergent vegetation, seasonal flooding | 5 | <1 |
| PEM1F | Emergent vegetation, temporary flooding | 1.6 | <1 |
| PFO1/4A | Broadleaf deciduous, needle evergreen, temporary flooding | 112.1 | 1.6 |
| PFO1/4C | Broadleaf deciduous, needle evergreen, seasonal flooding | 171.8 | 2.4 |
| PFO1C | Broadleaf deciduous, seasonal flooding | 1530.7 | 21.7 |
| PFO4/1A | Needle evergreen, broadleaf deciduous, semi-permanent flooding | 70.4 | 1 |
| PFO6F | Broadleaf deciduous, semi-permanent flooding | 166.1 | 2.3 |
| PSS1A | Scrub/shrub, temporary flooding | 29.8 | <1 |
| PSS1C | Scrub/shrub, seasonal flooding | 49.2 | 1 |
| PUBHh | Unconsolidated bottom, permanent flooding, impounded or diked | 11.5 | <1 |
| PUBHx | Unconsolidated bottom, permanent flooding, excavated | 38.2 | <1 |
| PUSCx | Unconsolidated shore, seasonal flooding, excavated | 1.2 | <1 |
| X | Other miscellaneous wetlands | 68.4 | 1 |
| Upland | Non-flooded, non-wetland habitats | 4,813.4 | 68.1 |
| | Total | 7,069.4 | 100 |

Source: EA (1995). Acreage based on GIS for Robins AFB.

## 3.2 Geology

The Atlantic Coastal Plain consists primarily of sands, gravels, and clays which have been rearranged and deposited over ancient bedrock by a retreating coastline. Where major rivers, such as the Ocmulgee, enter the Coastal Plain, wide bands of deep alluvium derived from Piedmont soils have been deposited. According to the *Geologic Map of Georgia* (Lawton, 1977), the Coastal Plain sands, gravels, and clays which are present at the soil surface on Robins AFB consist of deposits of upper Eocene, upper Cretaceous, and Tertiary age. The younger alluvium of the Ocmulgee was deposited during the Quaternary period. Cretaceous deposits are the oldest in the Atlantic Coastal Plain, and

Quaternary deposits are the youngest. The Tuscaloosa Formation, a Cretaceous period formation, lies over Paleozoic crystalline rock and harbors an aquifer which supplies the region with large quantities of water. No limestone formations with subsurface drainage or fault zones are known to occur on or around Robins AFB.

A wide variety of soil series and soil types are present on Robins AFB due to the existence of gently-sloping uplands, steep bluffs, upland wetlands, organic floodplain wetlands, and non-organic floodplain wetlands. The former Soil Conservation Service, now the USDA Natural Resources Conservation Service, conducted a Soil Survey of Robins AFB in 1989 (USDA, 1989). Sixteen soil series and nine complexes were mapped on the Base. A soil series is the lowest category of the U.S. system of soil taxonomy and is made up of soils that are almost alike. A soil complex consists of two or more soil series intermixed at a scale too small to be individually delineated on a soil survey map. On the Base there are seven upland soil series, seven lowland or floodplain series, two non-series-specific soil groups (hydraquents and udorthents), and four urban land complexes. The acreage covered by each soil type and its percentage of the total area of the Base are presented in **Table 3-2**.

**Table 3-2. Soil Series, Acreage and Proportionate Extent of Soils**

| Map Symbol | Soil Name | Slope (%) | Acres | % of Base Area |
|---|---|---|---|---|
| 1E | Ailey loamy sand | 8-25 | 111.49 | 1.58 |
| 2B | Bonifay loamy sand | 2-5 | 86.94 | 1.23 |
| 4 | Chastain loamy frequently flooded | 0-2 | 793.85 | 11.23 |
| 6A | Dothan loamy sand | 0-2 | 298.56 | 4.22 |
| 6B | Dothan loamy sand | 2-5 | 39.09 | 0.55 |
| 7B | Fuquay loamy sand | 0-5 | 252.32 | 3.57 |
| 7C | Fuquay loamy sand | 5-8 | 39.29 | 0.56 |
| 8 | Grady loam sand ponded | | 32.56 | 0.46 |
| 9 | Hydraquents frequently flooded | | 575.3 | 8.14 |
| 10 | Kingsland mucky peat frequently flooded | | 483.39 | 6.84 |
| 11 | Lynchburg sandy loam | | 14.56 | 0.21 |
| 12 | Ocilla loamy sand rarely flooded | 0-2 | 43.40 | 0.61 |
| 13B | Orangeburg loamy sand rarely flooded | 2-5 | 37.28 | 0.53 |
| 14 | Osier-Kinston complex frequently flooded | | 13.24 | 0.19 |
| 15 | Tawcaw silt loam frequently flooded | | 294.73 | 4.17 |
| 17 | Udorthents | 0-15 | 46.49 | 0.66 |

| Map Symbol | Soil Name | Slope (%) | Acres | % of Base Area |
|---|---|---|---|---|
| 18A | Urban land-Dothan complex | 0-2 | 141.06 | 2.00 |
| 18B | Urban land-Dothan complex | 2-5 | 154.31 | 2.18 |
| 18C | Urban land-Dothan complex | 5-8 | 3.58 | 0.05 |
| 19B | Urban land-Fuquay complex | 0-5 | 1,570.13 | 22.21 |
| 19C | Urban land-Fuquay complex | 5-8 | 135.75 | 1.92 |
| 20A | Urban land-Orangeburg complex | 0-2 | 22.40 | 0.32 |
| 20B | Urban land-Orangeburg complex | 2-5 | 83.18 | 1.18 |
| 20C | Urban land-Orangeburg complex | 5-8 | 58.98 | 0.83 |
| 21 | Urban land-Udorthents complex | 0-15 | 1,632.46 | 23.09 |
| 22 | Not surveyed | | 61.95 | 0.88 |
| W | Water | | 42.98 | 0.61 |
| | | Total | 7,069.27 | 100 |

Source: EA (1995). Acreage based on GIS data for Robins AFB.

## 3.3 Groundwater

**Aquifers**

The groundwater units at Robins AFB are designated, in descending order, as follows:

- Surficial aquifer
- Quaternary alluvial aquifer
- Upper Providence
- Lower Providence
- Cusseta (aquitard)
- Blufftown aquifer

The Quaternary alluvial aquifer consists of peat, clay, sand, and gravel layers that overlie the Providence unit in the Ocmulgee River floodplain areas. The Quaternary unit is exposed along the east side of Robins AFB, generally in the area designated as wetlands, and pinches out to the west. In most areas, the alluvium is in direct hydraulic communication with the underlying Providence aquifer, and in places it is difficult to distinguish between the two units lithologically.

The Providence aquifer consists of fine- to coarse-grained sands with interlayered silts and clays. The Providence outcrops over the west side of the Base and underlies the Quaternary alluvial aquifer to the east. The Providence is subdivided by Robins AFB into upper and lower units. This has been done primarily because of the aquifer's thickness and because

this subdivision facilitates discussions of hydrogeology and the extent of groundwater contaminant plumes. Robins AFB further divides the upper Providence into three subunits for the purpose of contaminant plume mapping in the "Greater Base Industrial Area". Portions of the surficial and Quaternary aquifers are also classified within these subunits.

Groundwater in the shallow aquifers (surficial, Quarternary alluvial, and upper Providence) at Robins AFB flows from west to east toward the Ocmulgee River. Groundwater in the upper Providence flows laterally from west to east and eventually either underflows or discharges vertically upward into the approximately 20 to 30 foot thick Quaternary alluvial aquifer. Groundwater flow direction in the Quaternary alluvial aquifer is generally the same as in the upper Providence. In places, the water table is locally mounded where surficial materials (such as landfills) or impoundments (such as Duck Lake, Scout Lake and Lake Luna) provide additional recharge. Along the eastern side of Robins AFB, beneath the Ocmulgee River floodplain, upward flows are induced from the lower Providence and Blufftown aquifers into the shallower aquifers.

**Water Supply and Drinking Water**

Not relevant to this EA

## 3.4 Climate

The central region of Georgia, including Robins AFB, is located within a moist, subtropical, mid-latitude climate zone. The average weather in this climate is characterized by long, warm, humid summers and short, mild winters. Yearly precipitation patterns may vary greatly, but typically there are two annual peaks: midsummer and late winter/early spring. The midsummer rainfall peak typically results from thunderstorms. The late winter/early spring peak typically results from cyclonic storms that regularly move through the region during this period, drawing in moisture from the Gulf of Mexico. Autumn typically is the driest season in this region (NOAA, 1982).

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## 4.0 AIR QUALITY

### 4.1 Regional Air Quality

The State of Georgia is in attainment for all the National Ambient Air Quality Standards (NAAQS) criteria pollutants except for ozone ($O_3$). Bibb and Monroe counties were designated as attainment for particulate matter (PM 2.5) in November 2009 (Federal Register, 2009). Air quality in Houston County, which includes Robins AFB, is currently classified as an attainment area (i.e., pollutant levels are below the NAAQS standards).

## 4.2 Air Emission Sources

The maintenance and repair of aircraft are the primary stationary sources of air emissions at Robins AFB. The large number of aircraft serviced by the Base in combination with the variety of aircraft types and services performed create a large and complex group of air emission sources. The primary emission sources include painting and depainting operations, solvent cleaning, and chromium plating and anodizing. Other sources include fuel storage tanks, peaking power generators, boilers, and various sources of fugitive volatile organic compounds (VOCs).

## 4.3 Air Quality Requirements at Robins AFB

Robins AFB is subject to a number of air quality regulatory requirements, including the Georgia Rules for Air Quality Control, the U.S. EPA requirements under the Clean Air Act, including Titles III, V, and VI of the 1990 Clean Air Act Amendments, the National Emission Standards for Hazardous Air Pollutants (NESHAP), and the New Source Performance Standards (NSPS).

### Title III Requirements

Not relevant to this EA.

### Aerospace NESHAP

Not relevant to this EA.

### Chromium Electroplating and Anodizing NESHAP

Not relevant to this EA.

### Halogenated Solvent Cleaning NESHAP

Not relevant to this EA.

### Title V Program

Not relevant to this EA.

### State Air Quality Permit

In the 1970 Amendments to the Clean Air Act, EPA was required to establish National Ambient Air Quality Standards (NAAQS). EPA established two levels of protection for the NAAQS, i.e., primary standards and secondary standards. The primary standards are designed to protect the public health and are set at levels that will protect the most sensitive individual. The secondary standards are meant to be equal to or more stringent

than the primary standards and are designed to protect the public welfare. NAAQS now exist for six criteria pollutants, i.e., carbon monoxide, lead, nitrogen oxides, ozone, particulate matter, and sulfur dioxide. Robins AFB is located in an attainment area, which means that the NAAQS are being met in the surrounding area (Houston County).

### 4.4 Emission Reductions

Not relevant to this EA.

### 4.5 References

Robins AFB (RAFB). July 1996. *Pollution Prevention Management Action Plan for Warner Robins Air Logistics Center, Robins AFB, Georgia*. Final Plan. Prepared for Environmental Management Directorate, Robins AFB, Georgia.

## 5.0 BIOLOGICAL ENVIRONMENT

The biological environment and ecology of Robins AFB have been summarized in the *Integrated Natural Resources Management Plan* (INRMP) (RAFB, 2007). Appendices of the INRMP list all flora and fauna known to occur on Robins AFB and contain maps indicating locations of known natural resources. The INRMP serves as a decision-making tool on environmental issues and serves as the basis of natural resource management. Relevant information is incorporated herein by reference.

### 5.1 Flora

This section describes the flora of the study area, and the description is organized on the basis of vegetation communities. Subsequently, management of the forest communities on the Base is discussed.

#### Communities

The diversity of vegetation communities on Robins AFB reflects the edaphic (soil) and topographic diversity of the site, as well as man's impact on the area. Natural communities can be categorized in a variety of ways. The Georgia Department of Natural Resources (DNR) conducted a rare species and natural communities study of Robins AFB (Heyman, 1994) that categorized and mapped the communities. Alternatively, for the purposes of this discussion the vegetation communities on the Base are categorized into 11 main types, including six upland communities, four lowland or

floodplain communities, and communities in disturbed areas. Relevant community types are discussed below.

1) Mixed Hardwood Forest. Most of the mixed hardwood stands are found on bluffs overlooking the Ocmulgee River floodplain. There are a few mixed hardwood stands along the low slopes north of Sandy Run Creek and on a ridge running northwest-southeast across the Ocmulgee floodplain (see below). The best examples of hardwood bluffs are along Fort Valley Street and Crescent Drive and just below the fifth hole of the Robins AFB golf course. Canopy species in these stands include mature white oak (*Quercus alba*), water oak, tulip poplar (*Liriodendron tulipifera*), beech, laurel oak (*Quercus laurifolia*), mockernut hickory (*Carya tomentosa*), and bluff white oak (*Quercus austrina*), which is uncommon in Georgia. Red buckeye (*Aesculus pavia*), dwarf pawpaw (*Asimina parviflora*), dogwood, and several invading exotics [most commonly Japanese honeysuckle (*Lonicera japonica*)] are in the understory. Heartleaf (ginger) (*Hexastylis arifolia*), Solomon's seal (*Polygonatum biflorum*), Indian pink (*Spigelia marilandica*), bloodroot (*Sanguinaria canadensis*), yellow passion flower (*Passiflora lutea*), and ruellia (*Ruellia carolinensis*) were among the most common herbs seen on one mixed hardwood bluff in early June. The Ocmulgee skullcap (*Scutellaria ocmulgee*), which is threatened in Georgia and is a federal candidate species (Patrick et al., 1995), and needle-palm (*Rhapidophyllum hystrix*), which is uncommon in Georgia, are found on the hardwood bluffs of Robins AFB (Heyman, 1994).

2) Swamp Tupelo Depression. Several small upland depressions dominated by Grady soils are scattered in the southern portion of Robins AFB. Often referred to as "gum ponds," these forested swamps are dominated by the presence of swamp tupelo or swamp black gum (*Nyssa biflora*). Sweet bay (*Magnolia virginiana*), sweet gum, laurel oak, black willow (*Salix nigra*), tulip poplar, and red maple are also common in this vegetation type. Joor's sedge (*Carex joorii*), *Carex lupuliformis*, bladderworts (*Utricularia* spp.), and Tracy's beakrush (*Rhynchospora tracyi*) are among the herbaceous flora found here (Heyman, 1994). Swamp tupelo also occurs in organic depressions in the Ocmulgee floodplain and in the mucky soils along Sandy Run Creek (see below).

3) Mixed Bottomland Hardwood Forest. This community is found generally on Tawcaw soils in flats in the Ocmulgee River floodplain. Sweet gum, laurel oak, cherrybark oak (*Quercus pagoda*), and American elm (*Ulmus americana*) typically are the dominant canopy trees in seasonally-flooded areas. In lower areas, overcup oak (*Quercus lyrata*), green ash (*Fraxinus pennsylvanica*), red maple, and water hickory (*Carya aquatica*) are

present. Common understory vegetation includes American hornbeam (*Carpinus caroliniana*), cane (*Arundinaria gigantea*), American holly, and dwarf palmetto (*Sabal minor*) (Wharton, 1978). Woody vines dominate the herbaceous layer in bottomland hardwood communities. Peppervine (*Ampelopsis arborea*), Virginia creeper (*Parthenocissus quinquefolia*), poison ivy (*Rhus radicans*), muscadine (*Vitis rotundifolia*), and cross vine (*Bignonia capreolata*) are all common here. Floodplain forests are also extremely rich in sedge (*Carex* spp.). Some bottomland hardwood forest like that on Robins AFB may contain as many as 20 species of *Carex*.

4) Water Tupelo, Water Tupelo-Bald Cypress Forest. In the deepest sloughs and depressions in the Ocmulgee floodplain, often on Chastain soils, water tupelo (*Nyssa aquatica*) forms pure stands or grows with bald cypress (*Taxodium distichum*). Swamp tupelo, water ash (*Fraxinus caroliniana*), and water elm (*Planera aquatica*) also are tree species of this semipermanently-flooded community (Wharton, 1978; Heyman, 1994). Trumpet creeper (*Campsis radicans*), swamp dayflower (*Commelina virginica*), and lizard's tail (*Saururus cernuus*) are common species of the herbaceous layer.

5) Organic Swamp. The soils of the floodplain of Sandy Run Creek are composed of Kingsland mucky peat and, unlike the Ocmulgee floodplain, are derived from decaying organic matter. The pH of this organic swamp is higher than that of most of the Ocmulgee floodplain, resulting in a different type of vegetation community. Swamp tupelo, red maple, sweet bay, red bay (*Persea palustris*), tulip poplar, sweet gum, and laurel oak are the dominant canopy trees. American holly, doghobble (*Leucothoe axillaris*), fetterbush (*Lyonia lucida*), cane, and winterberry (*Ilex verticillata*) are common in the understory and shrub layer. Common herb layer species include netted chain fern (*Woodwardia areolata*), cinnamon fern (*Osmunda cinnamomea*), and royal fern (*Osmunda regalis*). Harper's bog heartleaf and oval lady's-tresses (*Spiranthes ovalis*), both rare species in Georgia (Georgia DNR, 1997a), are found in the Sandy Run creek swamp community (Heyman, 1994). Organic swamp vegetation also is found where Sandy Run Creek empties into the Ocmulgee floodplain and is occasionally found in seepage depressions along the bluffs of the Ocmulgee floodplain (Wharton, 1978).

6) Disturbed Area Communities. In areas that have been disturbed by human or animal activity, variations of the above vegetation types may be found. Where floodplains have been cleared and along floodplain roads, graminaceous/herbaceous communities dominate; where beaver ponds exist, floating and marsh vegetation are present; and where bluffs have been cleared, weedy vegetation dominated by exotic plants occurs.

### Forest Management

Forest management practices on the Base are intended to provide for the restoration, long-term sustainability, and diversity of forest communities. Commercial harvesting is limited to small-stand timber sales in upland forest stands or pine plantations that need to be cleared prior to construction of new facilities. Even when these areas are harvested, small stands are retained whenever possible to provide visual relief and shade. The significant natural forest communities identified on Robins AFB by the Georgia DNR are within areas that are managed for natural habitat values, including old growth attributes of bottomland hardwood forest and wildlife habitat. These areas are managed as part of a natural habitat preserve or in a manner compatible with limited, dispersed recreational uses, such as hunting or birdwatching (EA, 1995). Recent management activities included survey of the loblolly pine plantations in 2003 with development of an updated 10-year management plan (URS, 2003a), and survey of the urban forest and development of updated management recommendations in 2004 (URS, 2004a).

## 5.2 Fauna

Wildlife species representative of the fauna of the study area are described in this section, and the description is organized on the basis of habitats. Subsequently, wildlife management on the Base is discussed.

### Habitats and Species

Representative listings of animal species characteristic of the major habitats on Robins AFB are provided in the following paragraphs. The species identified are derived from lists of animal species (vertebrates) likely to inhabit the habitats of Robins AFB provided in Heyman (1994), USDA (1989), and Hamel et al. (1982), available from the U. S. Forest Service. For birds, a letter following the species name indicates whether local populations are breeding (B) or wintering (W) only populations.

Organic Swamp Habitats. Organic swamps are known to provide habitat for amphibian and reptile species that include the many-lined salamander (*Stereochilus marginatus*), southern dusky salamander (*Desmognathus auriculatus*), two-lined salamander (*Eurycea bislineata cirrigera*), amphiuma (*Amphiuma means*), sirens (*Siren* spp.), rainbow snake (*Farancia erythrogramma*), cottonmouth (*Agkistrodon piscivorus*), and spotted turtle (*Clemmys guttala*), an uncommon species. Little is known of the mammal fauna of this habitat type. Hamel et al. (1982) list as the characteristic birds of this type the red-bellied woodpecker (B), winter wren (*Troglodytes troglodytes*) (W), Carolina wren (B), American robin (*Turdus migratorius*) (W), hermit thrush (*Catharus guttatus*) (W),

yellow-rumped warbler (*Dendroica coronata*) (W), white-throated sparrow (*Zonotrichia albicollis*) (W), and fox sparrow (*Passerella iliaca*) (W).

Floodplain Habitats. The fauna of mixed bottomland hardwood, water tupelo-bald cypress, and other lowland floodplain habitats includes both aquatic and terrestrial species. Dahlberg and Scott in Wharton (1978) list 57 species of fish from the Ocmulgee River drainage in Georgia. The amphibian fauna is known to include the bird-voiced treefrog (*Hyla avivoca avivoca*), which is restricted to floodplains (and has been recently heard calling in the Ocmulgee floodplain on Robins AFB), the bronze frog (*Rana clamitans clamitans*), the bull frog (*Rana catesbeiana*), and the carpenter frog (*Rana virgatipes)* (Wharton, 1978). Reptiles in this habitat include the rainbow snake, cottonmouth, and yellow-bellied turtle (*Chrysemys scripta scripta*) (Wharton, 1978).

Large mammals known to occur in floodplain habitats of the Coastal Plain include the black bear (*Ursus americanus*) (recently reported from the Ocmulgee floodplain and Sandy Run Creek on Robins AFB), feral pig (*Sus scrofa*), raccoon (*Procyon lotor*), opossum, swamp rabbit (*Sylvilagus aquaticus*), beaver (*Castor canadensis*), river otter (*Lutra canadensis*), and white-tailed deer (*Odocoileus virginianus*). Characteristic birds of floodplains in the southeastern United States include the American woodcock (*Scolopax minor*) (B), yellow-billed cuckoo (*Coccyzus americanus*) (B), barred owl (*strix varia*) (B), pileated woodpecker (B), red-bellied woodpecker (B), red-shouldered hawk (*Buteo lineatus*) (B), bald eagle (*Haliaeetus leucocephalus*) (W), osprey (*Pandion haliaetus*) (W), acadian flycatcher (*Empidonax virescens*) (B), Carolina wren (B), American robin (W), white-throated sparrow (W), tufted titmouse (B), red-eyed vireo (*Vireo olivaceus*) (B), blue-gray gnatcatcher (*Polioptila caerulea*) (B), prothonotary warbler (*Protonotaria citrea*) (B), northern parula warbler (*Parula americana*) (B), yellow-rumped warbler (W), and yellow-throated warbler (*Dendroica dominica*) (B) (Hamel et al., 1982).

**Wildlife Management**

Bird/aircraft strikes pose a considerable hazard to aircraft and their crews. A primary focus of wildlife management at Robins AFB is the elimination or minimization of aircraft exposure to potentially hazardous bird strikes, as well as strikes of terrestrial animals on the runway. The Base *BASH Plan* (RAFB, 2007) provides guidance in achieving this goal. The *BASH Plan* is based on hazards from both permanent (non-migratory) and seasonal (migratory) bird populations, and other animals that may wander onto the runway. Implementation of portions of the plan are continuous, while other

portions require implementation as required by increased bird or animal activity in the vicinity of the runway.

The hazards to safe flying posed by birds and animals are so varied that no single solution to the bird strike problem exists. Among the actions called for in the plan is the elimination, control, or reduction of environmental factors that attract birds or animals to the airfield. For example, because birds and other animals usually are attracted in numbers by the presence of water, vegetative cover (trees, shrubs, tall grasses), or landfills that may be a source of food, the Base is working to eliminate these attractions in the vicinity of the runway. In addition, bioacoustics (noise), pyrotechnics (fireworks), scare cartridges, and other methods are employed to disperse birds and cause them to avoid the vicinity of the runway.

Other wildlife management activities on the Base include habitat management through selective prescribed burning and thinning of pine stands to maintain and improve wildlife habitat for both game and nongame species; hunting of game species such as white-tailed deer and feral pigs in the floodplain of the eastern and southern areas of the Base, both to reduce the hazard to aircraft from large animals wandering onto the runway and for recreation; stocking of fish in the lakes to provide recreational fishing on the Base; installation of nesting boxes for birds and roosting boxes for bats; and installation of basking platforms for turtles.

### 5.3 Endangered, Threatened, and Sensitive Species

The Georgia Department of Natural Resources (DNR) has compiled lists of the endangered, threatened, and sensitive (ETS) plant and animal species of the state. *Protected Plants of Georgia* (Patrick et al., 1995) lists plant species that are officially protected by state law. The Georgia DNR also publishes tracking lists for plants and animals of special concern in the state (Georgia DNR, 1997a; 1997b).

Heyman (1994) produced lists of potentially occurring ETS species in Houston County, Georgia as part of a Georgia DNR rare species and natural communities study of Robins AFB. Heyman (1994) did not find any ETS animal species on Robins AFB during her study. The Soil Conservation Service (SCS), now the Natural Resource Conservation Service, reported (USDA, 1989) several ETS animal species as occurring on Robins AFB. They reported the bald eagle (federally listed as threatened and state-listed as endangered) as a late winter and summer visitor to open water (probably the Ocmulgee River). SCS also listed several fish species that are rare in the state of Georgia as being known from the river or creeks on Robins AFB: the goldstripe darter (*Etheostoma*

*parvipinne*) and redeye chub (*Notropis harperi*) – both state-listed as rare, the golden top minnow (*Fundulus chrysotus*), the Ocmulgee shiner (*Cyprinella callisema*), and the sailfin shiner (*Pteronotropis hypselopterus*). These earlier ETS surveys were updated in 1999 and 2000 by a rare plant survey and management plan (Rust, 1999) and a threatened and endangered animal species survey (Rust, 2000). Reptiles and amphibians were surveyed in 2003 and, although several new species were recorded, there were no reptile or amphibian ETS present (URS, 2003b). A botanical report in 2004 updated and consolidated previous plant surveys on Robins AFB (URS, 2004b).

Two plants found on Robins AFB currently are protected by state law: (1) the Ocmulgee skullcap (*Scutellaria ocmulgee*) is state listed as threatened in Georgia. At Robins AFB, it occurs on the hardwood bluffs overlooking the Ocmulgee River floodplain. (2) Harper's bog heartleaf (*Hexastylis shuttleworthii* var. *harperi*) is state listed as unusual, and a permit is required for commercial trade in the species. It was found along the margins and within the creek swamp along Sandy Run Creek (Heyman, 1994) and since has been found along the margins of the Ocmulgee floodplain (Gaddy, unpublished data). Eight other rare plants of concern found on Robins AFB are tracked by the state, but not legally protected. Six of these species, Awnpetal meadowbeauty (*Rhexia aristosa*), Boykin's lobelis (*Lobelia boykinii*), white doll's daisy (*Boltonia asteroids*), black-seeded spikerush (*Eleocharis* melanocarpa), Robbin's spikerush, (*Eleocharis* robbinsii), and quillwort arrowhead (*Sagittaria* isoetiformis) are found in the depression meadow south of Scout Lake. This site appears to be the only habitat for these species on Robins AFB. The remaining two rare plants of concern, October ladyies'-tresses (*Spiranthes ovalis*) and Southern peat moss sedge (*Carex lonchocarpa*), were found by Heyman (1994) in the floodplain of Sandy Run Creek on Robins AFB.

In addition to the identification of individual species of concern, significant natural communities also have been identified on Robins AFB. The Natural Resources Plan for Robins AFB, produced by the SCS (USDA, 1989), documented several noteworthy plant community types on Robins AFB, and Heyman (1994) described eight significant natural communities on the Base. Heyman (1994) listed the following areas/community types as significant: 1) old growth bottomland hardwood swamp (in the floodplain of the Ocmulgee); 2) creek swamp (in Sandy Run floodplain); 3) bay swamp (an organic swamp at the margin of the Ocmulgee floodplain); 4) gum-cypress pond (a beaver-maintained floodplain wetland); 5) gum pond (an upland pond near Sandy Run Creek); 6) Grady freshwater meadow (a depression meadow on Grady soils south of Scout Lake); 7) relict upland hardwood bluff forest (the hardwood bluffs overlooking the

Ocmulgee floodplain along Crescent Drive, Fort Valley Street, and Hannah Road); and 8) relict successional longleaf pine forest. The beech-southern magnolia-holly community on the ridge that extends southeastward into the floodplain of the Ocmulgee probably constitutes another significant natural area or community.

## 5.4 References

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2007b. *Robins Air Force Base Bird/Aircraft Strike Hazard (BASH) Plan 91-202.* Robins Air Force Base, Georgia.

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2003b. *Baseline Natural Resources Inventory, Reptile and Amphibian Survey*. Prepared by URS Corporation, subcontracted to Cape Environmental Management, Inc., for the Environmental Management Directorate, Warner Robins Air Logistics Center, Robins Air Force Base, Georgia. October.

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2004b. *Robins Air Force Base Botanical Report*. Prepared by URS Corporation, subcontracted to Cape Environmental Management, Inc., for the Environmental Management Directorate, Warner Robins Air Logistics Center, Robins Air Force Base, Georgia. December.

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## 6.0 CULTURAL RESOURCES

Cultural resources include prehistoric and historic sites, structures, artifacts, districts or any other physical evidence of human activities considered important to a culture or community for scientific, traditional, religious, or other reasons. Cultural resources include prehistoric and historic archaeological resources, as well as architectural resources. Prehistoric resources are evidences of human activity that predate the advent of written records in the region. Historic archaeological resources include campsites,

roads, battlegrounds, and a variety of other structures from the period of recorded history in the region. Architectural resources include structures or districts of historic or aesthetic significance, such as buildings, bridges, and dams. To be considered for protection, such architectural structures normally must be more than 50 years old. However, more recent structures, such as those constructed during the Cold War era, may warrant protection if they manifest the potential to gain significance in the future. According to the terminology of the National Historic Preservation Act of 1966, all of the above cultural resources may be considered historic properties.

### 1.1 Known Cultural Resources

Under Section 110 of the National Historic Preservation Act (16 USC 470h-2), Robins AFB has been given the responsibility of conducting a cultural resources inventory and evaluation of all of its holdings. The earliest archaeological survey and cultural resources inventory on the base was conducted in 1977. The first major archaeological survey of Robins AFB was conducted in 1986. The main base property has since been completely surveyed for archaeological sites and historic structures/districts, and the survey work has been reviewed and accepted by the Georgia SHPO.

All upland Phase II archaeological testing has been completed and Robins AFB has a total of 16 archaeological sites eligible for listing on the National Register of Historic Places (NRHP). The historical/architectural survey of the base examined all structures on base and Robins AFB has a total of 26 buildings eligible for the NRHP. Two districts (12 structures) and 14 additional individual buildings have been recommended as eligible for inclusion on the NRHP (**Table 6-1**).

**Table 6-1. NRHP Eligible Historic Structures and Districts on Robins AFB.**

| Resource | Description | NRHP Recommendation |
|---|---|---|
| Crew Readiness Facility (Building 12) | Altered, but contains Cold War significance, constructed in 1960. | Eligible. SHPO concurs. |
| Armaments Production/Assembly Facility (Building 94) | Built in 1960. | Eligible. SHPO concurs. |

| **Resource** | **Description** | **NRHP Recommendation** |
|---|---|---|
| Munitions Storage Facility (Building 97) | Built in 1960. | Eligible. SHPO concurs. |
| Munitions Storage Facility (Building 98) | Built in 1960. | Eligible. SHPO concurs. |
| Munitions Storage Facility (Building 105) | Built in 1960. | Eligible. SHPO concurs. |
| Munitions Storage Facility (Building 106) | Built in 1960. | Eligible. SHPO concurs. |
| Sentry Police Administration Facility (Building 107) | Built in 1960. | Eligible. SHPO concurs. |
| Control Tower and Operations Hangars (Building 110) | The original control tower/ operations building, built in 1942. | Eligible. SHPO concurs. |
| Maintenance Hangar (Building 125) | Largest building at Robins AFB, constructed in 1942. | Eligible. SHPO concurs. |
| Original Post Headquarters (Building 220) | The original base headquarters, built in 1942. | Eligible. SHPO concurs. |
| Officer's Circle District (Buildings 400, 405, 410-412, 415, 450) | Five two-story residential buildings and two storage structures constructed 1942; Colonial Revival style. | Eligible. SHPO concurs. |
| Chief's Circle District (Buildings 500-502, 504, 505) | Five two-story residential buildings, constructed 1942; Colonial Revival style. | Eligible. SHPO concurs. |

| Resource | Description | NRHP Recommendation |
|---|---|---|
| PAVE-PAWS Facility (Building 1400) | Surveillance radar, constructed 1986. Contains Cold War significance. | Eligible. SHPO concurs. |
| Maintenance Hangar (Building 2067) | Constructed for large aircraft in 1960. | Eligible. SHPO concurs. |
| Maintenance Hangar (Building 2081) | Constructed for large aircraft in 1960. | Eligible. SHPO concurs. |
| Munitions Storage Igloo (Building 2108) | Constructed for munitions storage in 1990. | Eligible. SHPO concurs. |

In addition to the general requirements for any Air Force facility to preserve cultural resources, Robins AFB has a Programmatic Agreement (PA) that was finalized August 2008 with the Georgia SHPO regarding maintenance activities on historic structures or in historic districts. Stipulations of the PA are followed so that base activities will have no adverse effects on any eligible historic structure or district. In addition, the *Integrated Cultural Resources Management Plan* (ICRMP) for Robins AFB was finalized December 2005. The archeological and cultural resources of Robins AFB have been summarized in the ICRMP.

The ICRMP and the PA specify the constraints on activities in or near the 26 eligible historic structures and two eligible historic districts. Basically, no activity is allowed that will detract from the attributes that made the structure or district eligible for the NRHP. If potential adverse effects threaten any eligible resource, and if the undertaking cannot feasibly be redesigned to avoid the effects, the adverse effects are to be mitigated through data recovery investigations and documentation under a plan reviewed and accepted by the SHPO.

## 1.2 References

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## 7.0 LAND USE

This section describes existing land use conditions on Robins AFB and in surrounding areas and also discusses factors affecting land use.

### 7.1 On-Base Land Use

This section describes existing land use conditions on Robins AFB. The fourteen land use categories used in the *Current Land Use Assessment* are based on the type of facilities occupying a site and the nature of activities that occur there. Twelve of the land use categories are those defined in the *Land Use Planning Bulletin* (USAF, 1986). Two additional categories, cemetery and forest [taken from the Tri-Service Commission Spatial Data Standards (TSSDS)], also are included to better describe land uses at Robins AFB.

The predominant land uses on Robins AFB are forest and airfield, which together account for almost 58 percent of the total Base area. Industrial, accompanied housing, outdoor recreation, and aircraft operations and maintenance occupy another 35 percent of the total Base area. The other eight land use categories together occupy the remaining 7 percent of the Base.

Forest. The forest land use category (2741 acres, or 38.8 % of total Base area) includes those areas that contain forest stands and are otherwise vacant. Most of the areas on Robins AFB assigned to the forest land use category (approximately 2,200 acres) are forested wetlands, which represent a major constraint to any potential future use. Forest land use areas are found mainly in the eastern part of the Base (associated with the Ocmulgee River floodplain), with smaller areas located at the northern tip and in the southern part of the Base in the Sandy Run Creek floodplain.

Airfield. The airfield land use category (1341.1 acres, or 19.0% of total Base area) consists of the entire airfield pavement system (runway, taxiways, aprons, overruns,

paved shoulders, and pads), navigational aids, and related open space. The airfield is located in the northern part of the Base. There are 17 numbered taxiways, seven major parking aprons, and a Hazardous Cargo Pad.

Open Space/Buffer Zone. Open space may be undeveloped for three main reasons: 1) it is necessary to act as a buffer between incompatible land uses, 2) it is undevelopable due to environmental or physical constraints, or 3) it is required for safety clearances, security areas, and utility easements. Open space at Robins AFB (69 acres, 1% of total Base area) is found along the western side of the Base, providing a buffer between the Base and SR 247, and along the eastern side of the airfield.

Water. Water land use includes 45.8 acres of lakes, ponds, and major streams (0.6% of total Base area). There are three lakes on Robins AFB: Duck Lake is centrally located, surrounded by housing and outdoor recreation land uses; Lake Luna and Scout Lake are located in the southeast part of the Base. There are three main creeks on Robins AFB: Sandy Run Creek on the southern border; Horse Creek on the east side of the Base; and Echeconnee Creek, which crosses the extreme northern tip of the Base. Also included in the water land use category are various weirs and retention ponds along the east side of the runway.

## 7.2 Off-Base Land Use

Robins AFB is located in northeastern Houston County, immediately east of the city of Warner Robins. It is situated mainly to the east of SR 247 and includes a predominantly residential area of approximately 332 acres located just west of the highway within the city limits of Warner Robins. The northern corner of the base is adjacent to Bibb County, and Twiggs County is to the east across the Ocmulgee River. The city of Macon is located approximately 18 miles northwest of the base, in Bibb County.

### Adjacent Land Uses

The following information on existing land uses in the areas surrounding Robins AFB was obtained from the Middle Georgia Regional Development Center. The Middle Georgia planning region is comprised of seven counties: Bibb, Crawford, Jones, Houston, Monroe, Peach, and Twiggs. This information is generally representative of current conditions.

Robins AFB is bordered on the north, east, and south by unincorporated areas of Houston County. Most of the unincorporated land area of Houston County is forest land, agricultural land, or open space. Most of the land abutting the base is vacant and

undeveloped. Property to the east of the base is owned by Bradley Plywood, Inc., and 1,500 acres of their property is designated as the Emergency Drop Zone for Robins AFB. The base has a license to enter this zone should circumstances warrant. Developed uses adjacent to the northernmost part of the base include the city of Warner Robins sewage treatment plant, a church, and some commercial and single family residential uses along SR 247. A large residential subdivision with a golf course is located just south of the base, across Sandy Run Creek. Much of the land surrounding the subdivision is devoted to agricultural uses, but subdivision development is continuing. Future development of the area east of the base is not anticipated, due to the poor soils, lack of access, and extensive Ocmulgee River floodplain.

The city of Warner Robins, located west of Robins AFB across SR 247, contains the most intensive development in the vicinity of the base. Commercial land use is mostly in the form of strip development along principal roadways such as SR 247, Watson Boulevard, Davis Drive, and Richard Russell Parkway. Industrial land uses are located along SR 247, especially north of the base. Limited residential areas are found within one mile of Robins AFB and consist mainly of manufactured homes.

Land uses in Bibb County in the vicinity of the base are similar to those in Houston County. Light commercial and industrial uses are located along SR 247. Several areas of low density residential development occur east of SR 247, which are located in or near noise and air hazard impact areas for Robins AFB. This section of Bibb County, bordered to the east and south by the Ocmulgee River and Echeconnee Creek and their floodplains, contains large tracts of undeveloped land and agricultural land.

Twiggs County is the least developed of the three counties surrounding Robins AFB. The portion of Twiggs County within the vicinity of Robins AFB is largely undeveloped. Most of the land along the Ocmulgee River consists of floodplains and wetlands and virtually no developed uses are located within one mile of the river.

There are scattered areas of publicly owned land in the vicinity of Robins AFB, used primarily for schools, recreational facilities, municipal government buildings, and health care facilities. The city of Warner Robins owns two adjacent industrial parks on either side of the Norfolk Southern rail line, southwest of the intersection of SR 247 and Russell Parkway. (However, as the industrial parks are developed, the lots are sold and converted to private ownership.) The largest tract of publicly owned land in the area, with the exception of Robins AFB itself, is the Middle Georgia Regional Airport, located approximately 1.5 miles north of the Bibb/Houston County line.

### Zoning

Not relevant to this EA

### 7.3 References

Geophex, Ltd. (Geophex). 1997. *Current Land Use Assessment, Robins Air Force Base, Warner Robins, Georgia*. Submitted to Directorate of Environmental Management, Division of Environmental Compliance, Robins AFB, Georgia.

U.S. Air Force (USAF).

1986. *Land Use Planning Bulletin.*

## 8.0 NOISE ENVIRONMENT

Not relevant to this EA.

## 9.0 SAFETY

Safety refers to those issues that directly affect the protection of human life and property. At Robins AFB, the predominant safety issues involve aviation, munitions, and fire prevention.

### 9.1 Aviation Safety

Not relevant to this EA

### 9.2 Munitions Safety

Not relevant to this EA.

### 9.3 Fire Protection

Not relevant to this EA.

### 9.4 References

Not relevant to this EA.

## 10.0 SOCIOECONOMIC RESOURCES

Not relevant to this EA.

## 11.0 INFRASTRUCTURE

Not relevant to this EA.

## 12.0 WASTE MANAGEMENT

### 12.1 Solid Waste

Not relevant to this EA.

### 12.2 Hazardous Materials and Waste

Not relevant to this EA.

### 12.3 Toxic Materials and Waste

Not relevant to this EA.

### 12.5 References

Not relevant to this EA.

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# APPENDIX B

# AGENCY/PUBLIC CORRESPONDENCE

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# PUBLIC NOTICE

## FOR THE DRAFT FINAL ENVIRONMENTAL ASSESSMENT (EA) AND DRAFT FINDING OF NO SIGNIFICANT IMPACT FOR THE REPLACEMENT OF HORSE CREEK BRIDGE AT ROBINS AFB GEORGIA

Robins AFB announces the availability for public review and comment of the proposed Draft EA, Draft Finding of No Significant Impact (FONSI) and Draft Finding of No Practicable Alternative (FONPA) for the Horse Creek Bridge Replacement at Robins AFB Georgia.

The Horse Creek pipe bridge, installed at Robins AFB in the 1950s, provided the only pedestrian and all-terrain vehicle access to base property and designated hunting areas east of Horse Creek. The bridge also provided access to the City of Warner Robins natural gas pipeline right-of-way that passes to the immediate north of the bridge location. Under the proposed action evaluated under this EA, the existing bridge pipes would be removed, and the failed structure would be replaced with a new prefabricated pedestrian bridge within the original bridge footprint. Preliminary design specifications for the new bridge call for a structure that is 70-feet long and 6-feet wide with capacity for carrying a 6,000 pound load.

A copy of the proposed EA, FONSI and FONPA are available for public viewing and comments for the next 30 days in the Nola Brantley Memorial Library (also known as the Houston County Library), 721 Watson Blvd, Warner Robins, GA, 478-923-0128. For questions or comments, please contact the 78th Air Base Wing Office of Public Affairs at 478-926-2137 or the address below:

78 ABW/PA
620 9th St Bldg 905 Rm. 215
RobinsAFB GA 31098
DSN 472-1024
Commercial: 478-222-1024
478-926-2137
FAX: 478-926-9597

94059

# OFFICE OF PLANNING AND BUDGET

Sonny Perdue
Governor

Debbie Dlugolenski
Director

## GEORGIA STATE CLEARINGHOUSE MEMORANDUM
## EXECUTIVE ORDER 12372 REVIEW PROCESS

TO: Rebecca Crader
78 CEG/CEA
Dept. of the Air Force

FROM: Barbara Jackson BJ
Georgia State Clearinghouse

DATE: 9/28/2010

PROJECT: Draft Final EA: Horse Creek Bridge Replacement (Robins AFB, GA)

STATE ID: GA100827002

The State level review of the above-referenced document has been completed. As a result of the environmental review process, the activity this document was prepared for has been found to be consistent with state social, economic, physical goals, policies, plans, and programs with which the State is concerned.

Additional Comments: The applicant/sponsor is advised that DNR's Wildlife Resources Division was included in this review but did not comment within the review period. Should they submit comments within the next two weeks, we will forward to you.

The applicant/sponsor is advised to note important comments from DNR's Historic Preservation Division.

/bj
Enc.: DNR/EPD, Sep. 20, 2010
DNR/HPD, Sep. 22, 2010

Form SC-4-EIS-4
Sep. 2010

GEORGIA
DEPARTMENT OF NATURAL RESOURCES
HISTORIC PRESERVATION DIVISION

CHRIS CLARK
COMMISSIONER

DR. DAVID CRASS
DIVISION DIRECTOR

September 22, 2010

Barbara Jackson
Georgia State Clearinghouse
270 Washington Street, SW, Eighth Floor
Atlanta, Georgia 30334

**RE: Robins AFB: Horse Creek Bridge Replacement**
**Houston County, Georgia**
**GA-100827-002**

Dear Ms. Jackson:

The Historic Preservation Division (HPD) has received information concerning the above referenced project in Houston County, Georgia. Our comments are offered to assist the U.S. Department of the Air Force and Robins Air Force Base (AFB) in complying with Section 106 of the National Historic Preservation Act of 1966, as amended.

HPD has received the Draft Final Environmental Assessment Horse Creek Bridge Replacement dated August 24, 2010. In addition, photographs of the bridge to be replaced and information that its date of construction is unknown rather than 1950s were submitted to our office on September 22, 2010. While our office has not been notified by the agency that it intends to comply with Section 106 through the National Environmental Policy Act (NEPA), we are able to comment on the project's effects to historic properties. In our opinion, the project as proposed will have No Effect to historic properties.

If you have any questions, please feel free to contact me at (404) 651-6624 or via email at elizabeth.shirk@dnr.state.ga.us.

Sincerely,

Elizabeth Shirk

Elizabeth Shirk
Environmental Review Coordinator

D Remote ID: R page of

**GEORGIA STATE CLEARINGHOUSE MEMORANDUM**
**EXECUTIVE ORDER 12372 REVIEW PROCESS**

TO: Barbara Jackson
Georgia State Clearinghouse
270 Washington Street, SW, Eighth Floor
Atlanta, Georgia 30334

FROM: MR. F. ALLEN BARNES F Allen Barnes
GA DNR-EPD DIRECTOR'S OFFICE

APPLICANT: Dept. of the Air Force - Robins AFB, GA

PROJECT: Draft Final EA: Horse Creek Bridge Replacement (Robins AFB, GA)

STATE ID: GA100827002

FEDERAL ID:

DATE: 9.17.10

☒ This project is considered to be consistent with those state or regional goals, policies, plans, fiscal resources, criteria for developments of regional impact, environmental impacts, federal executive orders, acts and/or rules and regulations with which this organization is concerned.

This project is not consistent with:

☐ The goals, plans, policies, or fiscal resources with which this organization is concerned. (Line through inappropriate word or words and prepare a statement that explains the rationale for the inconsistency. (Additional pages may be used for outlining the inconsistencies. Be sure to put the GA State ID number on all pages).

☐ The criteria for developments of regional impact, federal executive orders, acts and/or rules and regulations administered by your agency. Negative environmental impacts or provision for protection of the environment should be pointed out. (Additional pages may be used for outlining the inconsistencies. Be sure to put the GA State ID number on all pages).

☐ This project does not impact upon the activities of the organization.

***NOTE: Should you decide to FAX this form (and any attached pages), it is <u>not</u> necessary to mail the originals to us. [770-344-3568]***

RECEIVED
SEP 20 2010
GEORGIA
STATE CLEARINGHOUSE

Form SC-3
Aug. 2010

# APPENDIX C

# HORSE CREEK BRIDGE PHOTOGRAPHS

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**Photo 1**

**Photo 2**

**Horse Creek Bridge Before Collapse**

**Photo 1**

**Photo 2**

**Horse Creek Bridge After Collapse**